

## Nematrian SmartUtilities

[Nematrian website page: [SmartUtilityIntro](#), © Nematrian 2015]

The Nematrian website provides some *SmartUtilities* designed to help you carry out a range of common activities. They share common characteristics:

- Each allows you to enrich other more traditional website features. For example, *SmartLinks* allow you to create enriched versions of traditional hyperlinks.
- Each is accessed via a hyperlink that takes you to an intermediate resource on the Nematrian website designed to help you in some way. For example, *SmartCharts* have the visual appearance of charts, but also incorporate hyperlinks that take you to relevant pages on the Nematrian website where you can typically create equivalent charts yourself or access other information deemed by its original creator to be relevant to the chart.

There are two main categories of SmartUtilities currently available, which we refer to as *new-style* SmartUtilities and *old-style* SmartUtilities.

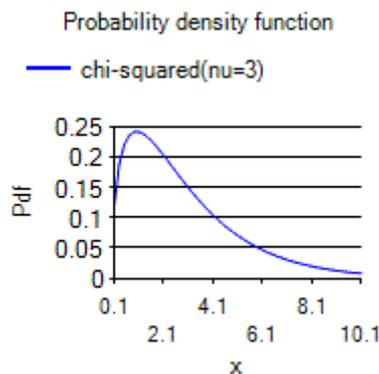
### New-style SmartUtilities

These in practice now include any output produced interactively using pages associated with the Nematrian [function library](#) or the Nematrian [online calculator](#).

- *Charts*. Graphical output produced interactively using either of the above is typically now returned back to the user in the form of a hyperlink that has the visual appearance of the desired chart but is actually a hyperlink back to the page used to create the relevant chart, repopulated with parameters used to do so.
- *Corresponding non-graphical output produced in the same sort of manner*. The website also now typically returns simpler types of results such as numbers, arrays or text back to the user using a similar hyperlink approach.

### Examples:

A chart derived interactively using one of the functions in the Nematrian [function library](#):



A numerical result:  $\sqrt{3 + e^{-\sin^{-1}(0.6)}} = \underline{1.87761805057501}$

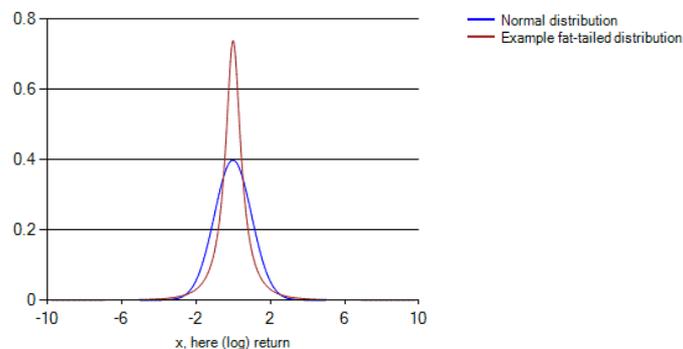
## Old-style SmartUtilities

These are only practically available to certain users.

- [SmartCharts](#). These involve a hyperlink in the form of an image, the image being the chart in question. The hyperlink takes the user to a page that can provide additional information about the chart, e.g. the data used to create the chart and information about the creator and why he or she thought it appropriate to create such a chart. The page also points users to how they can create similar charts using their own data, but does not specifically take them back to the page that they would use to do so.
- SmartLinks. These are like traditional hyperlinks but also allow you to include information about yourself and about the target website (e.g. why you found the target website useful and for what).
- SmartLists. These involve on-line lists of SmartLinks (e.g. a list of reference resources all relating to the same overall topic) or other types of SmartRecords.
- SmartULists. These enable you to tailor who can view the contents of other types of SmartUtilities that you have created, a little like defining who are your 'friends' on a social network.

A brief explanation of how old-style SmartUtilities work is set out in [How SmartUtilities work](#). Each is held in a common way on the Nematrian website, using Nematrian SmartRecords.

### Example:



### Note

The new-style Smart Charting builds on the old-style SmartChart approach. If you examine the example old-style SmartChart illustrated above you will find that it involves a link to [www.nematrian.com/SmartChart.aspx?c=xxx](http://www.nematrian.com/SmartChart.aspx?c=xxx) where the xxx is the SmartCode defining the SmartChart. When you now plot a chart using the Nematrian function library the website will return the result as a new-style Smart Chart but will also at the same time provide you with a SmartCode associated with the chart. This is also associated with a corresponding old-style SmartChart and some of the sub-parameters that can be included in the [ChartFormat](#) parameter used when creating a chart include ones only relevant to the old-style SmartChart rendering of such a chart. You can view the associated old-style SmartChart by going to [www.nematrian.com/SmartChart.aspx?c=xxx](http://www.nematrian.com/SmartChart.aspx?c=xxx), replacing xxx with the SmartCode in question.

## APPENDIX A

### Available SmartUtilities and Features Common to All Old-Style SmartUtilities

#### Nematrian Old-Style SmartCharts

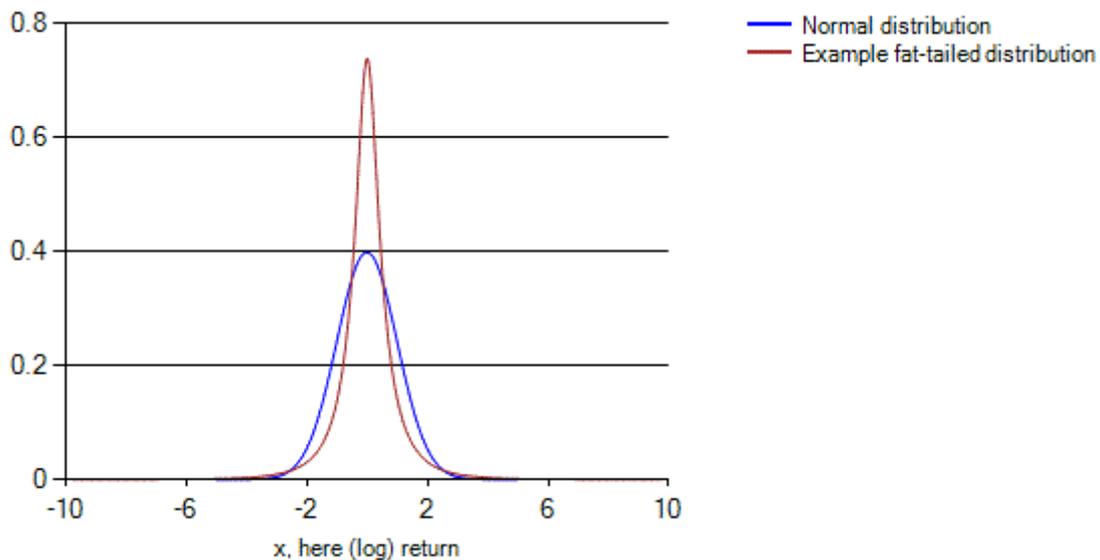
[[SmartChartIntro](#), to view an existing one use [SmartChart](#)]

Follow this link to [create a new old-style SmartChart](#).

Charts created in, say, Microsoft Excel or other common graphics packages often need explanatory text to make sense. They can produce unwieldy material or poor quality graphics when they are copied and pasted into other documents or presentations.

**Contrast this with a Nematrian SmartChart.** A SmartChart is visually similar to what can be produced by other charting packages (with the added advantage of often copying better). However, users clicking on a SmartChart are taken to an intermediate page (hosted on the Nematrian website) containing additional information on the chart. if you are a user who has been granted the ability to do so, access to parts of this information, e.g. the underlying data series, can be restricted using SmartULists, you can include a brief commentary on the chart, e.g. explaining its background and why you think it is useful and you can also include a link to other resources, e.g. your own or your company's website, on which you can post even more information. A SmartChart can therefore help users to understand better why you think the chart might help them.

#### An example SmartChart:



#### How do Old-Style SmartUtilities work?

[[SmartUtilityIntro2](#)]

The hyperlink taking users to the SmartUtility refers to the site creator, other information that is contained within the SmartUtility and to a unique code that the Nematrian website uses to identify the SmartUtility.

For example, suppose you were called John Smith and you wanted to set up a SmartList that targeted two SmartLinks that you had previously set up, one to a particular page on the website of the US Federal Reserve Bank and one to a particular page on the website of the European Central Bank.

The SmartLists's own hyperlink would point to a webpage along the lines of "http://www.nematrian.com/SmartList.aspx/?c=xxxx&a=supplied+by+John+Smith", where xxxx is a unique ID that the Nematrian website uses to identify the SmartList. Any additional text that appears when your mouse cursor hovers over the hyperlink is structured similarly.

When you clicked on this hyperlink you would then be taken to a page that contained the hyperlinks to the two target SmartLinks. Each of these would point to a webpage along the lines of "http://www.nematrian.com/SmartLink.aspx/?c=yyyy&a=supplied+by+John+Smith", where yyyy now refers the relevant SmartLink.

The Nematrian website uses the codes to look up the information you have saved regarding the SmartList and its constituent SmartLinks, and returns you a page that contains the desired information.

Slightly more complicated is to arrange for the hyperlink forming the SmartList to copy and paste from the Nematrian website into common computer environments such as Microsoft word (and then to behave as desired when these are converted into, say, pdf form). In some cases, this has not proved practical. This is one reason why, for example, the query string used by a Nematrian SmartLink includes reference to the web address being targeted by the SmartLink.

## **Permanent SmartUtilities that you have created**

[\[MySmartUtilities\]](#)

If you have been granted permission to create permanent Nematrian [SmartUtilities](#) then you are likely to want to refer to ones you have previously created from time to time.

The Nematrian website keeps a record of ones you have created (and not yet deleted). If you are logged in to the Nematrian website and your UserId allows you to save permanent SmartUtilities then a link to a (personal) SmartList listing them should appear below:

## **Default visual formats of Old-Style SmartUtilities**

[\[SmartUtilityIntro3\]](#)

(Old-style) [SmartUtilities](#) involve hyperlinks to pages on the Nematrian website where you can simultaneously view the underlying element(s) of the SmartUtility and additional information that the creator has linked with these elements. For example, a [SmartChart](#) includes information that the creator wishes you to view (e.g. why he or she thought that the chart might be relevant and for what purpose) and also explains how you can create similar charts yourself.

The default visual appearance of a SmartUtility can also be set by the creator. If the creator does not input anything into the relevant field when the SmartUtility is being created then the defaults used are:

- **Any SmartUtility whose output is a visual image, e.g. [SmartCharts](#)**

The SmartUtility should appear with the desired visual appearance, and the text alternative will be along the lines of "[" followed by the SmartUtility type followed by "]"

- **SmartLinks**

This should appear as: "[SmartLink to " followed by the resource specified in the SmartLink followed by "]")

- **Any other SmartUtility, e.g. SmartLists and SmartULists**

This should appear as: "[" followed by the SmartUtility type followed by "]"

## Additional Information Included in a Old-Style SmartUtility

[\[SmartUtilityIntro4\]](#)

Every (old-style) [SmartUtility](#) includes a small number of additional pieces of information that are generic to SmartUtilities, i.e. are independent of the specific type of SmartUtility in question. These are:

### Ones you choose

<i>SmartText</i>	The text defining the text appearance of the SmartUtility hyperlink that users would copy and paste into new documents. If left blank then will default as per <a href="#">default visual formats of SmartUtilities</a> . Not usually very relevant to SmartUtilities such as SmartCharts that are normally characterised by an image rather than by text.
<i>Creator</i>	Name that the creator of the SmartUtility wants to be described by in the SmartUtility (the OwnerId will also be shown alongside it, if applicable, as the Creator name might otherwise not be unique)
<i>Comment</i>	Comment that the creator of the SmartUtility wants to be shown alongside the SmartUtility, e.g. describing what the SmartUtility does and why he or she has created it
<i>ReferenceWebsite</i>	Reference website that the creator of the SmartUtility wants to be shown alongside the SmartUtility, e.g. his or her own or employer's website
<i>LimitOtherUsers</i>	If set to true then only users listed in the <i>OtherAllowedUsers</i> SmartUList will be able to view the SmartUtility
<i>OtherAllowedUsers</i>	SmartCode of SmartUList defining who can view the SmartUtility, if <i>LimitOtherUsers</i> is set to true. If this is left blank when <i>LimitOtherUsers</i> is set to true then only the creator (and system administrators) will be able to view this SmartUtility.

### Ones created automatically by the website

<i>Type</i>	What type of SmartUtility it is, see <a href="#">here</a> for the different types of SmartUtilities that currently exist
<i>OwnerId</i>	The Nematrian UserId of the original creator of the SmartUtility
<i>DateCreated</i>	Date SmartUtility created (or last modified if it has been edited since creation)

### Nematrian Old-Style SmartUtilities: Saving them permanently

[\[SmartUtilityPermanentSave\]](#)

Please speak to your usual Nematrian contact if you need permission to create permanent old-style SmartUtilities such as permanent [SmartCharts](#), [SmartLinks](#), [SmartLists](#) or [SmartULists](#).

## **APPENDIX B**

### **Information on individual types of Old-Style SmartUtilities**

#### **Choose an Old-Style SmartUtility type that you wish to create**

[\[SmartUtilityCreateChoose\]](#)

*[Provides a series of buttons to take you to the relevant page to create a specific type of SmartUtility]*

#### **Create a new Nematrian Old-Style SmartChart**

[\[SmartChartCreate\]](#)

Currently, the easiest way to create a new Nematrian old-style SmartChart is to use one of the Nematrian relevant web functions. The table below contains a list of those that are currently available, with the hyperlinks taking you to pages that allow you to use these functions interactively.

If you use one of these functions it will create a new temporary SmartChart for you. To make this SmartChart permanent please click on the SmartChart itself and then choose the *Save (permanently)* option. This is only possible if you are logged in and your UserId has been previously granted appropriate permission, see [here](#).

#### **SmartChart**

[\[SmartChart\]](#)

*[Will show relevant SmartChart if used with suitable query string]*

#### **Create a new Nematrian Old-Style SmartLink**

[\[SmartLinkCreate\]](#)

*[Contains a table that can be used to create a new SmartLink]*

Once you are happy with your entries above, press the Save (Temporary) button in the SmartUtility toolbar towards the top of this page to create/amend a [temporary](#) SmartRecord. To convert a temporary SmartRecord to a [permanent](#) SmartRecord you need to be logged in to the website using a UserId with the relevant permissions.

Please note that Nematrian reserves the right not to serve to others material you have included in the SmartUtility if it, in its absolute discretion, thinks that the material might cause offense to others. Usage of the Nematrian website is subject to the terms of the Nematrian [License Agreement](#).

Note: You can also create a new (temporary) old-style SmartLink by using the [MnCreateSmartLink](#) Nematrian web function.

#### **SmartLink**

[\[SmartLink\]](#)

[Will show relevant SmartLink if used with suitable query string]

## Create a new Nematrian Old-Style SmartList

[\[SmartListCreate\]](#)

[Contains a table that can be used to create a new SmartList]

Once you are happy with your entries above, press the Save (Temporary) button in the SmartUtility toolbar towards the top of this page to create/amend a [temporary](#) SmartRecord. To convert a temporary SmartRecord to a [permanent](#) SmartRecord you need to be logged in to the website using a UserId with the relevant permissions.

Please note that Nematrian reserves the right not to serve to others material you have included in the SmartUtility if it, in its absolute discretion, thinks that the material might cause offense to others. Usage of the Nematrian website is subject to the terms of the Nematrian [License Agreement](#).

Note: You can also create a new (temporary) old-style SmartList by using the [MnCreateSmartList](#) Nematrian web function.

## Instructions for creating a new Nematrian Old-Style SmartList

[\[SmartListInstructions\]](#)

There are two steps to creating an old-style [SmartList](#):

### (1) Input data into the SmartList entry table

This table forms the core of the [SmartList](#). Entries are of two types:

Entries in the first four columns in the final row of the input table

Entering data into these text boxes and then pressing the *Update Table* button adds a new row to the table. The columns are:

- *Entry Type*. A drop-down box defining the type of entry (either a 'basic' hyperlink, e.g. <http://www.nematrian.com/Introduction.aspx>\*, or a [SmartUtility](#), including possibly another [SmartList](#)).
- *Hyperlink/RecordId*. If the *Entry Type* is 'basic' then this would be a hyperlink to a webpage. If the *Entry Type* is one of the supported [SmartUtility](#) types then this would be the [RecordId](#) corresponding to the SmartUtility. Please bear in mind that if you create a SmartList and want to access it in the future then SmartUtilities referred to in it will not be accessible if you have not converted them to [permanent](#) SmartUtilities.
- *Description*. This text box provides you with the opportunity to add a short description regarding the SmartUtility in question.
- *Classification*. This text box is designed to allow you to classify your entries in whatever way you find most helpful.

### Entries in the final two columns of the remaining rows

If one or more rows have already been entered into the table then tick boxes will appear in the “Delete?” column and text boxes in the “Order?” Column corresponding to these rows.

If you tick a box in the “Delete?” column and press the *Update Button* then that row will be deleted from the table.

If you enter numbers into the “Order?” column and press the *Update Button* then the rows will be reordered (if they aren’t deleted because there is a tick in the *Delete?* column) in order of ascending values in the “Order?” column. Non-numeric (including blank) entries are treated as zero.

Any row added by entering data as above will be inserted at the end of the table.

## **(2) Input generic SmartUtility information for the SmartList into the remaining entry textboxes**

These boxes capture the same information as for all other SmartUtilities, i.e. the text that defines the visual appearance of the SmartUtility, how you (the creator) want to be referred to in the SmartUtility, commentary you wish to include, a reference website (usually your own) to be viewed alongside the rest of the contents of the SmartUtility and a field that allows you to control who can view or access the SmartUtility (using [SmartULists](#)).

Please note: Pressing the Save button automatically updates the table as per (a) above, even if you haven’t pressed the Update Button beforehand.

## **SmartList**

[\[SmartList\]](#)

*[Will show relevant SmartList if used with suitable query string]*

## **Create a new Nematrian Old-Style SmartUList**

[\[SmartUListCreate\]](#)

*[Contains a table that can be used to create a new SmartUList]*

Once you are happy with your entries above, press the Save (Temporary) button in the SmartUtility toolbar towards the top of this page to create/amend a [temporary](#) SmartRecord. To convert a temporary SmartRecord to a [permanent](#) SmartRecord you need to be logged in to the website using a UserId with the relevant permissions.

Please note that Nematrian reserves the right not to serve to others material you have included in the SmartUtility if it, in its absolute discretion, thinks that the material might cause offense to others. Usage of the Nematrian website is subject to the terms of the Nematrian [License Agreement](#).

Note: You can also create a new (temporary) old-style SmartUList by using the [MnCreateSmartUList](#) Nematrian web function.

## Instructions for creating a new Nematrion Old-Style SmartUList

[[SmartUListInstructions](#)]

There are two steps to creating an old-style [SmartUList](#):

### (1) Input data into the SmartUList entry table

The table forms the core of the [SmartUList](#). Entries are of two types:

#### Entries in the first three columns in the final row of the input table

Entering data into these text boxes and then pressing the *Update Table* button adds a new row to the table. The columns are:

- *UserId*. Enter the UserId that you wish to include in the SmartUList (if you limit user access to a [SmartUtility](#) by reference to this SmartUList, then this will correspond to a user that you wish to be able to view and/or access the [SmartUtility](#)).
- *Description*. This text box provides you with the opportunity to add a short description regarding the UserId (e.g. a more informative name)
- *Classification*. This text box is designed to allow you to classify your entries, e.g. to indicate the type of user.

#### Entries in the final two columns of the remaining rows

If one or more rows have already been entered into the table then tick boxes will appear in the “Delete?” column and text boxes in the “Order?” Column corresponding to these rows.

If you tick a box in the “Delete?” column and press the *Update Button* then that row will be deleted from the table.

If you enter numbers into the “Order?” column and press the *Update Button* then the rows will be reordered (if they aren’t deleted because there is a tick in the *Delete?* column) in order of ascending values in the “Order?” column. Non-numeric (including blank) entries are treated as zero.

Any row added by entering data as above will be inserted at the end of the table.

### (2) Input generic SmartUtility information for the SmartList into the remaining entry textboxes

These boxes capture the same information as for all other SmartUtilities, i.e. the text that defines the visual appearance of the SmartUtility, how you (the creator) want to be referred to in the SmartUtility, commentary you wish to include, a reference website (usually your own) to be viewed alongside the rest of the contents of the SmartUtility and a field that allows you to control who can view or access the SmartUtility (using [SmartULists](#)).

Please note: Pressing the Save button automatically updates the table as per (a) above, even if you haven’t pressed the Update Button beforehand.

## **SmartUList**

[\[SmartUList\]](#)

*[Will show relevant SmartUList if used with suitable query string]*