

CAPLIN

# Caplin Trader 1.5

---

## Element Renderer Configuration XML Reference

April 2010

CONFIDENTIAL

# Contents

<b>1</b>	<b>Preface.....</b>	<b>1</b>
1.1	What this document contains.....	1
	About Caplin document formats .....	1
1.2	Who should read this document.....	1
1.3	Related documents.....	1
1.4	Typographical conventions.....	2
1.5	Feedback.....	2
<b>2</b>	<b>An introduction to Element Renderers.....</b>	<b>3</b>
<b>3</b>	<b>XML Reference information.....</b>	<b>4</b>
3.1	Technical assumptions and restrictions.....	4
3.2	Ordering and nesting of tags .....	4
3.3	XML tag descriptions.....	6
	<anyHTML> .....	6
	<attribute> .....	6
	<control> .....	7
	<downstream> .....	7
	<handler> .....	8
	<renderer> .....	9
	<rendererDefinitions> .....	10
	<template> .....	10
	<transform> .....	10
	<upstream> .....	11
<b>4</b>	<b>Element Renderer JavaScript classes.....</b>	<b>12</b>
4.1	Display Control JavaScript classes.....	13
	Available display controls .....	13
	caplin.control.basic.ImageControl .....	14
	caplin.control.basic.TextControl .....	15
4.2	Formatter JavaScript classes.....	16
	Available formatters .....	17
	caplin.element.formatter.BondNotationFormatter .....	17
	caplin.element.formatter.DateFormatter .....	18
	caplin.element.formatter.DecimalFormatter .....	19
	caplin.element.formatter.InvalidPriceFormatter .....	20
	caplin.element.formatter.NullValueFormatter .....	20

---

	caplinx.element.formatter.SnapshotMaturityDateFormatter .....	21
	caplin.element.formatter.TruncateDecimalFormatter .....	21
4.3	Styler JavaScript classes.....	22
	Available stylers .....	23
	caplin.element.styler.ClassStyler .....	23
	caplin.element.styler.EllipsisStyler .....	24
	caplin.element.styler.FlashStyler .....	24
	caplinx.element.styler.PriceStyler .....	25
	caplin.element.styler.RemoveButtonStyler .....	26
	caplin.element.styler.TooltipStyler .....	26
4.4	Parser JavaScript classes .....	28
4.5	Event Handler JavaScript classes.....	29
	Available event handlers .....	29
	caplinx.element.handler.RemoveGridRowOnClickHandler .....	30
	caplinx.element.handler.TradeOnClickHandler .....	30
<b>5</b>	<b>Glossary of terms and acronyms.....</b>	<b>31</b>

# 1 Preface

## 1.1 What this document contains

This reference document describes the XML-based configuration that defines Element Renderers in a Caplin Trader application.

### About Caplin document formats

This document is supplied in three formats:

- ◆ Portable document format (*.PDF* file), which you can read on-line using a suitable PDF reader such as Adobe Reader®. This version of the document is formatted as a printable manual; you can print it from the PDF reader.
- ◆ Web pages (*.HTML* files), which you can read on-line using a web browser. To read the web version of the document navigate to the *HTMLDoc\_m\_n* folder and open the file *index.html*.
- ◆ Microsoft HTML Help (*.CHM* file), which is an HTML format contained in a single file. To read a *.CHM* file just open it – no web browser is needed.

#### For the best reading experience

On the machine where your browser or PDF reader runs, install the following Microsoft Windows® fonts: Arial, Courier New, Times New Roman, Tahoma. You must have a suitable Microsoft license to use these fonts.

#### Restrictions on viewing *.CHM* files

You can only read *.CHM* files from Microsoft Windows.

Microsoft Windows security restrictions may prevent you from viewing the content of *.CHM* files that are located on network drives. To fix this either copy the file to a local hard drive on your PC (for example the Desktop), or ask your System Administrator to grant access to the file across the network. For more information see the Microsoft knowledge base article at <http://support.microsoft.com/kb/896054/>.

## 1.2 Who should read this document

This document is intended for Software Developers who need to configure Element Renderers in Caplin Trader.

## 1.3 Related documents

- ◆ **Caplin Trader: How To Create And Use Element Renderers**  
Introduces the Element Renderer framework, and describes how to create and use Element Renderers in a Caplin Trader application.
- ◆ **Caplin Trader: Grid XML Configuration Reference**  
Describes the XML-based configuration that defines the layout and functionality of Grids in a Caplin Trader application.

◆ **Caplin Trader: API Reference**

The API reference documentation provided with Caplin Trader. The classes and interfaces of this API allow you to extend the capabilities of Caplin Trader. In particular, the document describes the interfaces that your application must implement when you write your own Element Renderer JavaScript classes.

◆ **Ext JS API reference documentation**

This document describes the API of the third party "Ext JS" component framework. In particular, it specifies the Ext Date Tokens that are used to configure the [caplin.element.formatter.DateFormatter](#) class.

## 1.4 Typographical conventions

The following typographical conventions are used to identify particular elements within the text.

<b>Type</b>	<b>Uses</b>
<b>aMethod</b>	Function or method name
<i>aParameter</i>	Parameter or variable name
<i>/AFolder/Afile.txt</i>	File names, folders and directories
<pre>Some code;</pre>	Program output and code examples
The <code>value=10</code> attribute is...	Code fragment in line with normal text
Some text in a dialog box	Dialog box output
Something typed in	User input – things you type at the computer keyboard
<b>XYZ Product Overview</b>	Document name
◆	Information bullet point
■	Action bullet point – an action you should perform

**Note:** Important Notes are enclosed within a box like this. Please pay particular attention to these points to ensure proper configuration and operation of the solution.

**Tip:** Useful information is enclosed within a box like this. Use these points to find out where to get more help on a topic.

## 1.5 Feedback

Customer feedback can only improve the quality of our product documentation, and we would welcome any comments, criticisms or suggestions you may have regarding this document.

Visit our feedback web page at <https://support.caplin.com/documentfeedback/>.

## 2 An introduction to Element Renderers

Caplin Trader uses Element Renderers to render data in display components such as Grids, Trees, Trade Tickets, and Trade Tiles.

An Element Renderer is defined in XML, and instances are created from the XML definition by the Element Renderer framework at runtime. The XML definition specifies the JavaScript classes that are used to construct each instance of the Element Renderer, and you can either write your own custom JavaScript classes, or use one or more of the JavaScript classes provided with the Element Renderer framework.

**Tip:** The document **Caplin Trader: How To Create And Use Element Renderers** introduces the Element Renderer framework, and provides examples that show you how to create and use Element Renderers in a Caplin Trader application.

## 3 XML Reference information

This is the XML reference information for the Element Renderer.

### 3.1 Technical assumptions and restrictions

#### XML

The XML markup defined in this document conforms to XML version 1.0 and the XML schema version defined at <http://www.w3.org/2001/XMLSchema>.

### 3.2 Ordering and nesting of tags

Each top level tag is shown below, together with the child tags that it can typically contain (the children are in no particular order).

**Tip:** Advanced users may wish to consult the Relax NG Schema (*rendererDefinitions.rnc*) for definitive information on the ordering and nesting of tags.

For a description of each tag and its attributes, see [XML tag descriptions](#) .

#### <rendererDefinitions>

This is the outermost tag

```
<rendererDefinitions>  
  <renderer></renderer> (one or more)  
</rendererDefinitions>
```

#### <renderer>

```
<renderer>  
  <template></template>  
  OR  
  <control></control>  
  <downstream></downstream> (one or more)  
  AND/OR  
  <upstream></upstream> (one or more)  
</renderer>
```

**<template>**

```
<template>
  <anyHTML> (zero or more)
  <renderer></renderer> (zero or more)
</template>
```

**<anyHTML>**

```
<anyHTML>
  <anyHTML> (zero or more)
  <renderer></renderer> (zero or more)
</anyHTML>
```

**<control>**

```
<control>
  <handler></handler> (one or more)
</control>
```

**<downstream>**

```
<downstream>
  <transform></transform> (one or more)
</downstream>
```

**<upstream>**

```
<upstream>
  <transform></transform> (one or more)
</upstream>
```

**<handler>**

```
<handler>
  <attribute /> (zero or more)
</handler>
```

**<transform>**

```
<transform>
  <attribute /> (zero or more)
</transform>
```



### 3.3 XML tag descriptions

This section describes the XML tags that you can use to define an Element Renderer. The tags are arranged in alphabetical order by tag name.

#### Default attribute values

For each tag, the attributes you can use are listed and described in a table. The “Req?” column indicates whether the attribute is always required (“Y”) or is optional (“N”). If you do not supply an optional attribute then the default value is applied. If you do not supply an optional attribute and the default is '(none)', then not supplying the attribute can result in one of two behaviors – either the behavior is as specified in the description column of the table, or there is no effect on the behavior.

#### <anyHTML>

<anyHTML>

A child of <template>, any HTML tag can be used in the definition of a renderer. For example, the HTML <var> tag could contain two <renderer> tags in the definition of a composite renderer.

**Attributes:** This tag has no attributes.

#### <attribute>

<attribute>

A name/value pair that configures one property of a <control>, <handler>, or <transform>. The JavaScript classes that implement these objects, and the properties that can be configured using name/value pairs, are described in the subsections of "Element Renderer JavaScript classes".

**Attributes:**

Name	Type	Default	Req?	Description
default	string	(none)	N	The default value of the property if the value is derived from a field and the field has no value (see 'value').
name	string	(none)	Y	The name of the property being configured.
value	string	(none)	Y	The value of the property. The value can include a named field if the name of the field is placed inside braces preceded by '\$'. For example, value="\${RTTP.RECORD_STATUS}" sets the value of the property to the value of the field 'RTTP.RECORD_STATUS'.

## <control>

<control>

Identifies the display control that is rendered on the screen. Typical controls are text controls that display text, image controls that display images, and input controls that allow text to be entered. The controls provided with the Reference Implementation of Caplin Trader are described in "Display Control JavaScript classes".

### Attributes:

Name	Type	Default	Req?	Description
type	string	(none)	Y	The fully qualified name of the JavaScript class that implements the control (for example, "caplin.control.basic.TextControl").

## <downstream>

<downstream>

A list of the transforms that are applied to downstream data when the data is displayed in a control. Downstream data is data that is provided by a data provider, such as an 'rttpContainerGridDataProvider' or 'webServiceGridDataProvider' (see the document "Caplin Trader: Grid XML Configuration Reference"). Each transform in the list is defined by a <transform> tag.

### Attributes:

Name	Type	Default	Req?	Description
name	string	(none)	N	A comma separated list of the data streams that are transformed by this set of downstream transforms. For example, name="bid,ask" would transform the 'bid' and 'ask' data streams. This optional attribute is only required if streams are defined using the 'streams' attribute of the <renderer> tag, and allows different transforms to be applied to each data stream.

## <handler>

<handler>

Identifies an event handler that responds to events on the control, such as when the end user clicks the control or types text into the control. The event handlers provided with the Reference Implementation of Caplin Trader are described in "Event Handler JavaScript classes".

### Attributes:

Name	Type	Default	Req?	Description
name	string	(none)	Y	The fully qualified name of the JavaScript class that implements the event handler (for example, "caplinx.control.handler.TradeOnClickHandler").

## <renderer>

<renderer>

A <renderer> tag can specify three different kinds of renderer.

When it is the parent of a <control> tag, it defines a display control and the optional <upstream> and <downstream> transforms that transform the data in the control.

When it is the parent of a <template> tag, it defines a composite renderer that is constructed from other renderer definitions.

When it is the child of a <template> tag, it is part of a composite renderer and identifies the renderer of a particular data stream.

A typical use of a composite renderer is to render data from multiple data streams (such as 'bid' and 'ask' prices) in the column of a Grid. You will find an example XML definition of a composite renderer in the document 'Caplin Trader: How To Create And Use Element Renderers'.

### Attributes:

Name	Type	Default	Req?	Description
stream	string	(none)	N	The name of the data stream that is rendered (for example, stream="bid"). This optional attribute is only required when the renderer is part of a composite renderer (a child of the <template> tag). The renderer of the named data stream is identified by the 'type' attribute (Second role).
streams	string	(none)	N	A comma separated list of stream names (for example, streams="bid,ask"). This optional attribute is only required when the renderer is a composite renderer (the parent of a <template> tag), and allows different renderers to be applied to different data streams (see 'stream'). Any name can be used for a stream, as long as it is unique to the renderer.  The order and number of streams must match the order and number of data sources defined in the XML configuration of the display component. For example, if the renderer is used in a Grid column, then the order and number of streams must match the order and number of fields in the XML definition of the column (see the document "Caplin Trader: Grid Configuration XML Reference").
type	string	(none)	N	The 'type' attribute has two distinct roles.  First role: If the <renderer> is the parent of a <control> or <template> tag, then 'type' uniquely identifies the renderer from all other renderers that you define. The type can then be referred to in the XML configuration of a display component, such as in the configuration of a column in a Grid, or by the 'type' attribute of a renderer that is part of a composite renderer (see Second role).  Second role: If the renderer is part of a composite renderer (a child of the <template> tag), then 'type' identifies the renderer that renders a particular data stream (see 'stream').

## <rendererDefinitions>

<rendererDefinitions>

The outermost tag of the renderer definition XML, containing one or more renderer definitions (see <renderer>).

**Attributes:** This tag has no attributes.

## <template>

<template>

A child of the <renderer> tag, the <template> tag can contain standard HTML (see <anyHTML>), as well as other <renderer> tags. In this way a 'composite renderer' can be constructed from HTML and references to other renderer definitions.

**Attributes:** This tag has no attributes.

## <transform>

<transform>

Identifies a formatter, styler, or parser that transforms the <upstream> or <downstream> data in a display control. The transforms provided with the Reference Implementation of Caplin Trader are described in the subsections of "Element Renderer JavaScript classes".

**Attributes:**

Name	Type	Default	Req?	Description
name	string	(none)	N	The fully qualified name of the JavaScript class that implements the transform (for example, "caplin.element.styler.FlashStyler").

## <upstream>

<upstream>

A list of the transforms that are applied to upstream data when the data is displayed in a control. Upstream data is data that is provided by the end user, such as when data is typed into a control in a column header to filter the instruments in a Grid. Each transform in the list is defined by a <transform> tag.

### Attributes:

Name	Type	Default	Req?	Description
name	string	(none)	N	A comma separated list of the data streams that are transformed by this set of upstream transforms. For example, name="bid,ask" would transform the 'bid' and 'ask' data streams. This optional attribute is only required if streams are defined using the 'streams' attribute of the <renderer> tag, and allows different transforms to be applied to each data stream.

## 4 Element Renderer JavaScript classes

An Element Renderer is a number of JavaScript classes that provide a display control, and the optional event handlers and data transforms (formatters, stylers, and parsers) that transform the data in the control (see the [Glossary of terms and acronyms](#)<sup>[31]</sup> for a description of these terms).

When you define an Element Renderer in XML you must specify the JavaScript classes that you want to use. You can either specify one of the JavaScript classes provided with the Reference Implementation of Caplin Trader, or provide your own classes that implement the appropriate interfaces (see the **Caplin Trader: API Reference** documentation for further information).

This section describes the display control, event handler, and data transform JavaScript classes that are provided with the Reference Implementation of Caplin Trader.

**Tip:** The document **Caplin Trader: How To Create And Use Element Renderers** describes how to write your own Element Renderer JavaScript classes, showing examples of a custom formatter, stycler, and handler.

### About formatters, stylers, and parsers

Formatters, stylers, and parsers are JavaScript classes that transform the data in a control. The function of each of these transforms is summarized below.

- ◆ A formatter converts data from a known input format to a required output format. If the input format is not recognized, then the input and output formats will be identical. A typical use of a formatter is to convert data from a machine friendly format (such as the number of seconds since the beginning of January 1970), to a user friendly format (such as 21-Jun-2009).
- ◆ A stycler transforms the appearance of data in a control. A typical use is to set the foreground and background color of the displayed text.
- ◆ A parser analyses input data and attempts to convert it to a specified output format. A typical use of a parser is to convert a string entered by the end user (such as the date 21-Jun-2009), to a format suited to machine processing (such as the number of seconds since the beginning of January 1970).

**Note:** Formatters and stylers are applied in the same order in which they are defined in the XML configuration; the output of one transform being the input to the next. Parsers can be defined in any order.

## 4.1 Display Control JavaScript classes

When you define an Element Renderer in XML, you must specify the JavaScript class that implements the display control. You can write your own JavaScript class to implement the control or use one of the classes provided with the Reference Implementation of Caplin Trader.

This section describes the display controls that are provided with the Reference Implementation, and shows you how to specify a control in your Element Renderer XML configuration.

### About display controls

A display control is a screen element that can display information (such as text or images), or allow the end user to interact with the application (such as by typing text into the control, or clicking on part of the control).

### Specifying the JavaScript class that implements the display control

A display control is specified by setting the `type` attribute of the `<control>` tag to the fully qualified name of the implementing JavaScript class. An example is shown below.

```
<control type="caplin.control.basic.ExampleDisplayControl" />
```

### Available display controls

The display controls provided with the Reference Implementation of Caplin Trader are summarized in the following table, and are described in more detail in the sections that follow.

Control	Description
<a href="#">caplin.control.basic.ImageControl</a>   14	A display control that can render one part of a multi part image on the screen when the parts of the multi part image are arranged vertically on top of each other. This type of control can display a different part of the image depending on the state of the mouse (mouse out, mouse over, and mouse down).
<a href="#">caplin.control.basic.TextControl</a>   15	Simply displays text on the screen. This control can be used to display data in the cells of a grid column, such as indicative prices for an instrument or the name of an instrument.



## caplin.control.basic.ImageControl

```
<control type="caplin.control.basic.ImageControl">
```

### Description

An image control is a display control that can render one part of a multi part image on the screen when the parts of the multi part image are arranged vertically on top of each other. This type of control can display a different part of the image depending on the state of the mouse (mouse out, mouse over, and mouse down).

### Event Handlers

Image controls can also have event handlers (see [Event Handler JavaScript Classes](#)<sup>[29]</sup>) that respond to events on the control (such as when the end user clicks the image).

### Properties that can be set using name/value pair attributes of the <attributes> tag:

None.

**Tip:** If you need further information about when and how to use this control, please contact Caplin Support.

### Example XML

In the Reference Implementation of Caplin Trader, the image control renders a "remove row" button at the left hand side of each row in a personal grid (one button in each row). The row is removed from the grid when the end user clicks this button (see [caplinx.element.handler.RemoveGridRowOnClickHandler](#)<sup>[30]</sup>).

```
<control type="caplin.control.basic.ImageControl" />
```

The following pictures show the multi part image and how the part that is displayed changes when the mouse hovers over the image (in this case, when the mouse hovers over the button in the last row of the grid).



	Currency	Rate
X	EURCHF	1.5903/1.5927
X	EURUSD	1.5852/1.5872
X	USDJPY	102.14/102.15

**The second top part of the multiple image is displayed when the mouse hovers over a button.**

## caplin.control.basic.TextControl

```
<control type="caplin.control.basic.TextControl">
```

### Description

A text control is a display control that simply displays text on the screen. This type of control can be used to display data in the cells of a grid column, such as the price of an instrument or the name of an instrument.

### Event Handlers

Text controls can also have event handlers (see [Event Handler JavaScript Classes](#)<sup>[29]</sup>) that respond to events on the control (such as when the end user clicks on a displayed price).

### Properties that can be set using name/value pair attributes of the <attributes> tag

None.

### Example XML

```
<control type="caplin.control.basic.TextControl" />
```

## 4.2 Formatter JavaScript classes

When you define an Element Renderer in XML you can specify optional JavaScript classes that format the data in the display control. You can write your own JavaScript class to implement a formatter or use one of the classes provided with the Reference Implementation of Caplin Trader.

This section describes the formatters that are provided with the Reference Implementation, and shows you how to specify a formatter in your Element Renderer XML configuration.

### Specifying the JavaScript class that implements the formatter

A formatter is specified by setting the `name` attribute of the `<transform>` tag to the fully qualified name of the implementing JavaScript class. An example is shown below.

```
<transform name="caplin.element.formatter.ExampleDataFormatter" />
```

### Setting formatter properties

The properties of some formatters can be set using `name/value` pair attributes of the `<attribute>` tag. In the following example the property `outputFormat` is set to "d-M-Y", which provides a format specification to the formatter.

```
<attribute name="outputFormat" value="d-M-Y"/>
```

You can also set the value of a property to the value of a field using the notation `value="${FIELD_NAME}"`. In the following example the property `outputFormat` is set to the value of the field "PREFERENCE\_DATE\_FORMAT".

```
<attribute name="outputFormat" value="${PREFERENCE_DATE_FORMAT}">
```

You can set the default value that is applied to a property if the value of the property is derived from a field, and the specified field has no value.

```
<attribute name="outputFormat" value="${PREFERENCE_DATE_FORMAT}" default="d-M-Y"/>
```

In this case the specified field is "PREFERENCE\_DATE\_FORMAT" and the default value is "d-M-Y". Setting the `default` value is optional.

## Available formatters

The formatters provided with the Reference Implementation of Caplin Trader are summarized in the following table, and described in more detail in the sections that follow.

Formatter	Description
<a href="#">caplin.element.formatter.BondNotationFormatter</a> <sup>17</sup>	Formats a price to one of two standard bond price notations.
<a href="#">caplin.element.formatter.DateFormatter</a> <sup>18</sup>	Converts a date from a known format to another format.
<a href="#">caplin.element.formatter.DecimalFormatter</a> <sup>19</sup>	Formats a value to a specified number of decimal places.
<a href="#">caplin.element.formatter.InvalidPriceFormatter</a> <sup>20</sup>	Substitutes an invalid price with a specified string.
<a href="#">caplin.element.formatter.NullValueFormatter</a> <sup>20</sup>	Substitutes a null value with a specified string.
<a href="#">caplinx.element.formatter.SnapshotMaturityDateFormatter</a> <sup>21</sup>	Converts a fractional number of years into a formatted string.
<a href="#">caplin.element.formatter.TruncateDecimalFormatter</a> <sup>21</sup>	Truncates a value to a specified number of decimal places.

### caplin.element.formatter.BondNotationFormatter

```
<transform name="caplin.element.formatter.BondNotationFormatter">
```

#### Description

The bond notation formatter converts a decimal number to one of two standard bond market notations (called fraction and decimal). Bond notations are sometimes used to represent US Treasury bond prices.

Each notation represents a bond price as a whole number followed by '-', and then two fractional parts. The most significant fractional part is the number of 32nds, and the least significant fractional part (the remainder) is the number of 8ths of a 32nd.

In fraction bond notation the remainder is expressed as a Unicode fraction (as in '102-05 7/8'), with 4/8ths (1/2) being represented by '+' (as in '102-05+').

In decimal bond notation the remainder is expressed as a whole number of 8ths (as in 102-05 07).

#### Properties that can be set using name/value pair attributes of the <attributes> tag:

name (property)	value (type)	Description
fractions	boolean	An optional attribute that converts the decimal number to fraction bond notation when 'true', and to decimal bond notation when 'false' (the default).
rounding	string	An optional attribute that rounds the remainder up to the nearest 8th when 'up', and down to the nearest 8th when 'down'. The default is to round fractions of an 8th less than 0.5 down, otherwise to round fractions of an 8th up.

### Example XML

The following example converts a decimal number to fraction bond notation, rounding the remainder up to the nearest 8th.

```
<transform name="caplin.element.formatter.BondNotationFormatter">  
  <attribute name="fractions" value="true"  
    name="rounding" value="up" />  
</transform>
```

In this case, the decimal number 102.183 would be converted to '102-05 7/8' (102 + 5/32+ 7/(8\*32) ).

The next example converts a decimal number to decimal bond notation, rounding the remainder up to the nearest 8th.

```
<transform name="caplin.element.formatter.BondNotationFormatter">  
  <attribute name="fractions" value="false"  
    name="rounding" value="up" />  
</transform>
```

In this case, the decimal number 102.183 would be converted to '102-05 07' (102 + 5/32+ 7/(8\*32) ).

## caplin.element.formatter.DateFormatter

```
<transform name="caplin.element.formatter.DateFormatter">
```

### Description

The date formatter converts a date from an expected input format to a required output format. If the input date is not in the expected format then the input is returned unchanged. The input and output formats are specified using Ext date tokens (<http://www.extjs.com/deploy/ext-2.2/docs/?class=Date>).

**Properties that can be set using name/value pair attributes of the <attributes> tag:**

name (property)	value (type)	Description
inputFormat	Ext Date Tokens	The expected input format of the date (default is d-M-Y h:m:s).
outputFormat	Ext Date Tokens	The required output format of the date (default is d-M-Y h:m:s).

### Example XML

The following example converts a date in the U format to the default output format. The U format is the number of seconds since the Unix Epoch (January 1 1970 00:00:00 GMT).

```
<transform name="caplin.element.formatter.DateFormatter">  
  <attribute name="inputFormat" value="U" />  
</transform>
```

If the input date is 1e12 (the number of seconds in scientific notation), then the output date is "09-Sep-2001 01:46:40".

The next example converts a date in the U format to a specified output format (YMd).

```
<transform name="caplin.element.formatter.DateFormatter">  
  <attribute name="inputFormat" value="U"  
            name="outputFormat" value="YMd" />  
</transform>
```

If the input date is 1e12 (the number of seconds in scientific notation), then the output date is "2001Sep09".

### caplin.element.formatter.DecimalFormatter

```
<transform name="caplin.element.formatter.DecimalFormatter">
```

#### Description

The decimal formatter formats a value to a specified number of decimal places.

**Properties that can be set using name/value pair attributes of the <attributes> tag:**

name (property)	value (type)	Description
dp	nonNegativeInteger	The number of decimal places to which the value is formatted.

#### Example XML

The following example sets the number of decimal places to the value of the field "DP". If this field has no value, then the number of decimal places is "3" (default="3").

```
<transform name="caplin.element.formatter.DecimalFormatter">  
  <attribute name="dp" value="${DP}" default="3" />  
</transform>
```

The next example sets the number of decimal places to the fixed value "3" (a default value is not required or defined).

```
<transform name="caplin.element.formatter.DecimalFormatter">  
  <attribute name="dp" value="3" />  
</transform>
```

In this case "1.26" would be formatted as "1.260", and "1.26666" would be formatted as "1.267".

### caplin.element.formatter.InvalidPriceFormatter

```
<transform name="caplin.element.formatter.InvalidPriceFormatter">
```

#### Description

The invalid price formatter formats a price when the price is invalid, by substituting the price with replacement text. A price is invalid when it is not a positive number (or zero).

Properties that can be set using name/value pair attributes of the <attributes> tag:

name (property)	value (type)	Description
invalidPrice	string	The replacement text when the price is invalid.

#### Example XML

The following example formats an invalid price as "-".

```
<transform name="caplin.element.formatter.DateFormatter">  
  <attribute name="invalidPrice" value="-" />  
</transform>
```

### caplin.element.formatter.NullValueFormatter

```
<transform name="caplin.element.formatter.NullValueFormatter">
```

#### Description

The null value formatter formats a string when the string is void, by substituting the string with replacement text. A string is void when it is null, undefined, or the empty string.

Properties that can be set using name/value pair attributes of the <attributes> tag:

name (property)	value (type)	Description
nullValue	string	The replacement text when the string is void.

#### Example XML

The following example formats a null, undefined, or empty string with the text "N/A".

```
<transform name="caplin.element.formatter.DateFormatter">  
  <attribute name="nullValue" value="N/A" />  
</transform>
```

## caplinx.element.formatter.SnapshotMaturityDateFormatter

```
<transform name="caplinx.element.formatter.SnapshotMaturityDateFormatter">
```

### Description

The snapshot maturity date formatter converts a fractional number of years into a formatted string. Values less than 1.0 are formatted as months, and values greater than or equal to 1.0 are formatted as years.

### Properties that can be set using name/value pair attributes of the <attributes> tag:

None.

**Tip:** If you need further information about when and how to use this control, please contact Caplin Support.

### Example XML

The following example converts a fractional number of years into a formatted string.

```
<transform name="caplin.element.formatter.SnapshotMaturityDateFormatter" />
```

For example, 0.5 would be formatted as "6 m", and 1.5 would be formatted as "1.5 year".

## caplin.element.formatter.TruncateDecimalFormatter

```
<transform name="caplin.element.formatter.TruncateDecimalFormatter">
```

### Description

The truncate decimal formatter truncates a value to the specified number of decimal places. If the value already has fewer decimal places than that specified, then the value is not truncated.

### Properties that can be set using name/value pair attributes of the <attributes> tag:

name (property)	value (type)	Description
dp	nonNegativeInteger	The number of decimal places to which the value is truncated.

### Example XML

The following example sets the number of decimal places to "3", which would truncate "1.20000" to "1.200" and "1.26666" to "1.267", but would leave "1.20" unchanged.

```
<transform name="caplin.element.formatter.TruncateDecimalFormatter">  
  <attribute name="dp" value="3" />  
</transform>
```



## 4.3 Styler JavaScript classes

When you define an Element Renderer in XML you can specify optional JavaScript classes that style the data in the display control. You can write your own JavaScript class to implement a styler or use one of the classes provided with the Reference Implementation of Caplin Trader.

This section describes the stylers that are provided with the Reference Implementation, and shows you how to specify a styler in your Element Renderer XML configuration.

### Specifying the JavaScript class that implements the styler

A styler is specified by setting the `name` attribute of the `<transform>` tag to the fully qualified name of the implementing JavaScript class. An example is shown below.

```
<transform name="caplin.element.styler.ExampleDataStyler" />
```

### Setting styler properties

The properties of some stylers can be set using `name/value` pair attributes of the `<attribute>` tag. In the following example the property `color-up` is set to "#286221" (dark green).

```
<attribute name="color-up" value="#286221"/>
```

You can also set the value of a property to the value of a field using the notation `value="${FIELD_NAME}"`. In the following example the property `color-up` is set to the value of the field "THIS\_COLOR\_UP".

```
<attribute name="color-up" value="${THIS_COLOR_UP}"/>
```

## Available stylers

The stylers provided with the Reference Implementation of Caplin Trader are summarized in the following table, and described in more detail in the sections that follow.

Styler	Description
<a href="#">caplin.element.styler.ClassStyler</a> <sup>23</sup>	Applies a CSS class to the HTML elements in a display control if a field has a particular value.
<a href="#">caplin.element.styler.EllipsisStyler</a> <sup>24</sup>	Applies an ellipsis (...) to the HTML elements in a control.
<a href="#">caplin.element.styler.FlashStyler</a> <sup>24</sup>	Changes the color of a displayed value for a specified period (giving the appearance of a flashing value) when the value increases or decreases.
<a href="#">caplinx.element.styler.PriceStyler</a> <sup>25</sup>	Applies a CSS class to a price to reflect the status of the price. The status of a price can be stale or not stale, and tradable or not tradable.
<a href="#">caplin.element.styler.RemoveButtonStyler</a> <sup>26</sup>	Disables the "remove row" button in a personal grid, and updates the tooltip for the button, when the record for the row is stale.
<a href="#">caplin.element.styler.TooltipStyler</a> <sup>26</sup>	Applies text for a tooltip to the HTML elements in a control.

### caplin.element.styler.ClassStyler

```
<transform name="caplin.element.styler.ClassStyler">
```

#### Description

The class styler applies a CSS class to the HTML elements in a display control when a field has a particular value.

**Properties that can be set using name/value pair attributes of the <attributes> tag:**

name (property)	value (type)	Description
state	string	The field whose value determines whether or not the CSS class is applied. The class is applied if the value of this field is true, otherwise the class is not applied. The value that represents true is determined by the <code>true</code> property (see below).
class	string	The name of the CSS class that is applied.
true	string	The value that represents true.

#### Example XML

The following example identifies a field, a CSS class, and a value that determines whether or not the CSS class is applied.

```
<transform name="caplin.element.styler.ClassStyler">  
  <attribute name="state" value="{RTP.RECORD_STATUS}" />  
  <attribute name="class" value="stale" />  
  <attribute name="true" value="3" />  
</transform>
```

In this case the CSS class `stale` is applied when the value of the field `{RTP.RECORD_STATUS}` is 3.

### caplin.element.styler.EllipsisStyler

```
<transform name="caplin.element.styler.EllipsisStyler">
```

#### Description

The ellipsis styler displays an ellipsis (...) at the end of visible text when there is not enough room in the control to display all the text.

**Note:** The ellipses styler only works in Internet Explorer.

#### Properties that can be set using name/value pair attributes of the <attributes> tag:

None.

#### Example XML

The following example applies an ellipsis styler.

```
<transform name="caplin.element.styler.EllipsisStyler" />
```

### caplin.element.styler.FlashStyler

```
<transform name="caplin.element.styler.FlashStyler">
```

#### Description

The flash styler changes the color of a displayed value for a specified period when the value increases or decreases. Changing the color in this way gives the appearance of a flashing value, and is typically used in the columns of a grid if the columns are displaying prices.

#### Properties that can be set using name/value pair attributes of the <attributes> tag:

name (property)	value (type)	Description
duration	positiveInteger	The number of milliseconds for which the color changes.
color-up	string	The foreground color to apply when the value increases (optional). The color can be any valid CSS color.
color-down	string	The foreground color to apply when the value decreases (optional). The color can be any valid CSS color.

name (property)	value (type)	Description
backgroundColor-up	string	The background color to apply when the value increases (optional). The color can be any valid CSS color.
backgroundColor-down	string	The background color to apply when the value decreases (optional). The color can be any valid CSS color.

**Example XML**

The following example sets the foreground and background colors that are applied when the data value increases or decreases.

```
<transform name="caplin.element.styler.FlashStyler">
  <attribute name="duration" value="500" />
  <attribute name="color-up" value="#286221" />
  <attribute name="color-down" value="#841819" />
  <attribute name="backgroundColor-up" value="#cdefbd" />
  <attribute name="backgroundColor-down" value="#feb3aa" />
</transform>
```

In this case a dark green foreground on a light green background is applied if the value increases, and a dark red foreground on a light red background if the value decreases. Each color is applied for 500 milliseconds, after which the colors return to the default colors.

**caplinx.element.styler.PriceStyler**

```
<transform name="caplinx.element.styler.PriceStyler">
```

**Description**

The price styler applies a CSS class to a price to reflect the status of the price. The status of a price can be stale or not stale, and tradable or not tradable.

**Properties that can be set using name/value pair attributes of the <attributes> tag:**

name (property)	value (type)	Description
recordStatus	string	The field that determines whether or not the price is stale. The name of the field is specified using the notation "\${FIELD_NAME}".
tradableState	string	The field that determines whether or not the price is tradable. The name of the field is specified using the notation "\${FIELD_NAME}".
class-tradable	string	The CSS class that is applied when the price is tradable but not stale.
class-stale	string	The CSS class that is applied when the price is stale but not tradable.
class-tradablestale	string	The CSS class that is applied when the price is tradable and stale.

**Tip:** If you need further information about when and how to use this styler, please contact Caplin Support.

### Example XML

The following example sets the CSS classes that are applied when the price is tradable and not stale (tradablePrices), stale and not tradable (stale), and tradable and stale (tradablestale). No CSS class is applied when the price is not tradable and not stale.

```
<transform name="caplin.element.styler.PriceStyler">
  <attribute name="recordStatus" value="{RECORD_STATUS}" />
  <attribute name="tradableState" value="{TRADABLE}" />
  <attribute name="class-tradable" value="tradablePrices" />
  <attribute name="class-stale" value="stale" />
  <attribute name="class-tradablestale" value="tradablestale" />
</transform>
```

## caplin.element.styler.RemoveButtonStyler

```
<transform name="caplin.element.styler.RemoveButtonStyler">
```

### Description

The remove button styler disables the "remove row" button in a personal grid, and changes the tooltip for the button when the record for the row is stale.

Properties that can be set using name/value pair attributes of the <attributes> tag:

name (property)	value (type)	Description
recordStatus	string	The name of the field that determines whether or not the record is stale. The name is specified using the notation "{FIELD_NAME}".
stale-tooltip	string	The tooltip that is displayed when the record is stale and the end user hovers over the "remove row" button.
Non-stale-tooltip	string	The tooltip that is displayed when the record is not stale and the end user hovers over the "remove row" button.

### Example XML

The following example sets the tooltip for the "remove row" button when the record is not stale ("Click to remove"), and when the record is stale ("disabled"). The name of the field that determines whether or not the record is stale is set to "RECORD\_STATUS".

```
<transform name="caplin.element.styler.RemoveButtonStyler">
  <attribute name="recordStatus" value="{RECORD_STATUS}" />
  <attribute name="non-stale-tooltip" value="Click to remove" />
  <attribute name="stale-tooltip" value="disabled" />
</transform>
```

## caplin.element.styler.TooltipStyler

```
<transform name="caplin.element.styler.TooltipStyler">
```

### Description

The tooltip styler applies text for a tooltip to the HTML elements in a control. The tooltip text pops up when the mouse hovers over the control.

**Properties that can be set using name/value pair attributes of the <attributes> tag:**

name (property)	value (type)	Description
tooltip	string	The text for the tooltip. Field values can be included in tooltip text using the notation "\${FIELD_NAME}".

**Example XML**

The following example sets the tooltip text for the HTML elements in a control.

```
<transform name="caplin.element.styler.TooltipStyler">  
  <attribute name="tooltip" value="${ISSUER} ${COUPON} ${MATURITY}" />  
</transform>
```

In this case the tooltip text is completely defined by field values, and would evaluate to something like "JPM 5,00 16-Sep-2012".

## 4.4 Parser JavaScript classes

When you define an Element Renderer in XML you can specify optional JavaScript classes that parse the data in the display control. Parsers are not currently provided with the Reference Implementation of Caplin Trader. You must write your own JavaScript class to implement a parser.

This section shows you how to specify a parser in your Element Renderer XML configuration.

### Specifying the JavaScript class that implements the parser

A parser is specified by setting the `name` attribute of the [<transform>](#) tag to the fully qualified name of the implementing JavaScript class. An example is shown below.

```
<transform name="mybank.element.parser.ExampleDataParser" />
```

## 4.5 Event Handler JavaScript classes

When you define an Element Renderer in XML you can specify optional JavaScript classes that handle mouse and keyboard events on the display control. You can write your own JavaScript class to implement an event handler or use one of the classes provided with the Reference Implementation of Caplin Trader.

This section describes the event handlers that are provided with the Reference Implementation, and shows you how to specify a handler in your Element Renderer XML configuration.

### Specifying the JavaScript class that implements the event handler

An event handler is specified by setting the `name` attribute of the `<handler>` tag to the fully qualified name of the implementing JavaScript class. An example is shown below.

```
<handler name="caplin.element.handler.ExampleEventHandler" />
```

### Setting event handler properties

The properties of some event handlers can be set using `name/value` pair attributes of the `<attribute>` tag. In the following example the property `action` is set to "onAddLeg".

```
<attribute name="action" value="onAddLeg"/>
```

You can also set the value of a property to the value of a field using the notation `value="{FIELD_NAME}"`. In the following example the property `action` is set to the value of the field "LEG".

```
<attribute name="action" value="{LEG}"/>
```

### Available event handlers

The event handlers provided with the Reference Implementation of Caplin Trader are summarized in the following table, and described in more detail in the sections that follow.

Handler	Description
<a href="#">caplin.element.handler.RemoveGridRowOnClickHandler</a>	An example event handler that removes a row from a personal grid when the end user clicks a "remove row" button at the left-hand-side of the row.
<a href="#">caplin.element.handler.TradeOnClickHandler</a>	An example event handler that opens a trade ticket when the end user clicks a price in the display control.



## caplinx.element.handler.RemoveGridRowOnClickHandler

```
<handler name="caplinx.element.handler.RemoveGridRowOnClickHandler">
```

### Description

The remove-grid-row-on-click handler is an example of an event handler that removes a row from a personal grid when the end user clicks a "remove row" button at the left-hand-side of the row in a personal grid (see [caplin.control.basic.ImageControl](#)<sup>[14]</sup>).

### Properties that can be set using name/value pair attributes of the <attributes> tag

None.

**Tip:** If you need further information about when and how to use this handler, please contact Caplin Support.

### Example XML

```
<handler name="caplinx.element.handler.RemoveGridRowOnClickHandler" />
```

## caplinx.element.handler.TradeOnClickHandler

```
<handler name="caplinx.element.handler.TradeOnClickHandler">
```

### Description

The trade-on-click handler is an example of an event handler that opens a trade ticket when the end user clicks a price in the display control.

### Properties that can be set using name/value pair attributes of the <attributes> tag

None.

### Example XML

```
<handler name="caplinx.element.handler.TradeOnClickHandler" />
```

## 5 Glossary of terms and acronyms

This section contains a glossary of terms, acronyms, and abbreviations, used in this document.

Term	Definition
<b>Blotter</b>	A <b>display component</b> of <b>Caplin Trader</b> that displays information about each trade.
<b>Caplin Liberator</b>	Caplin Liberator is a real-time financial internet hub (server) that delivers trade messages and market data to and from subscribers over any network.
<b>Caplin Trader</b>	A <b>Rich Internet Application</b> framework for constructing <b>Caplin Xaqua client</b> applications for browser-based trading. It includes a comprehensive set of trading <b>GUI</b> components.  Caplin Trader was formerly called "Caplin Trader Client".
<b>Caplin Xaqua</b>	A framework for building single-dealer platforms that enables banks to deliver multi-product trading direct to client desktops.
<b>Caplin Xaqua client</b>	A client desktop application that interfaces with <b>Caplin Xaqua</b> to deliver multi-product trading to end users. The application can be implemented in any technology that is supported by Caplin Xaqua; for example Ajax, Microsoft .NET, Microsoft Silverlight™, Adobe Flex™, and Java™.  <b>Caplin Trader</b> is a framework for constructing browser-based Caplin Xaqua client applications.
<b>Data provider</b>	A data provider provides data to the <b>display components</b> of <b>Caplin Trader</b> . An example is the 'rttpContainerGridDataProvider' (see <b>Caplin Trader: Grid XML Configuration Reference</b> ), which provides data from a web server for displaying in a <b>Grid</b> .
<b>Display component</b>	A <b>GUI</b> component of <b>Caplin Trader</b> that can be rendered in a page on the screen.  The term also refers to the JavaScript code that generates the component and handles its user interaction. Caplin Trader has a number of pre-defined, customizable display components, such as <b>Grids</b> , <b>Trade Tiles</b> , and the <b>Blotter</b> .
<b>Display control</b>	A screen element that is rendered by a JavaScript class. A display control can display information (such as text or images), or allow the end user to interact with the application (such as by typing text into the control, or clicking part of the control).
<b>Downstream data</b>	Data provided by a <b>data provider</b> , such as indicative prices from a web server.
<b>Element Renderer</b>	A <b>display control</b> and the optional transforms that <b>transform</b> the data displayed in the control. An Element Renderer can be identified in the XML configuration of a <b>display component</b> (such as to render data in the cells of a <b>Grid</b> column).
<b>Event handler</b>	An event handler is a JavaScript class that handles mouse and keyboard events on a <b>display control</b> , such as when the end user clicks on a displayed price.
<b>Field</b>	A named identifier for a data item. An example of a field is a data item from <b>Caplin Liberator</b> , such as the price of a financial instrument. Fields supply data to the cells of a <b>Grid</b> .

<u>Term</u>	<u>Definition</u>
<b>Formatter</b>	<p>A formatter converts data from a known input format to a required output format. If the input format is not recognized, then the input and output formats will be identical.</p> <p>A typical use of a formatter is to convert a value suited to machine processing (such as the number of seconds since the beginning of January 1970), to a string formatted for the benefit of the end user (such as 21-Jun-2009).</p>
<b>Grid</b>	<p>A <b>display component</b> of <b>Caplin Trader</b> that renders data in a tabular format.</p>
<b>GUI</b>	<p><u>G</u>raphical <u>U</u>ser <u>I</u>nterface</p>
<b>Parser</b>	<p>A parser analyses input data and attempts to convert it to a specified output format.</p> <p>A typical use of a parser is to convert a string entered by the end user (such as the date 21-Jun-2009), to a format more suited to machine processing (such as the number of seconds since the beginning of January 1970).</p>
<b>Stream</b>	<p>A stream is a named data source in an <b>Element Renderer</b>, in the same way that a <b>field</b> is a named data source in a <b>grid</b> column. In controls that support multiple data streams (such as the spread control), different transforms can be applied to each data stream.</p>
<b>Styler</b>	<p>A styler is a JavaScript class that changes the appearance of the data in a <b>display control</b> (for example, the color of the displayed text).</p>
<b>Trade Tile</b>	<p>A <b>display component</b> that allows the user to trade on a product with a single mouse click.</p>
<b>Transform</b>	<p>A data <b>styler</b>, <b>formatter</b>, or <b>parser</b> that transforms the data in a <b>display control</b>. A transform can change the appearance or value of the data (for example the color of the displayed text or the number of decimal places in a number).</p>
<b>Upstream data</b>	<p>Data provided by the end user, such as when data is typed into a control in a column header to filter the instruments in a grid.</p>

## Contact Us

Caplin Systems Ltd  
Triton Court  
14 Finsbury Square  
London EC2A 1BR  
Telephone: +44 20 7826 9600  
Fax: +44 20 7826 9610  
[www.caplin.com](http://www.caplin.com)

The information contained in this publication is subject to UK, US and international copyright laws and treaties and all rights are reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the written authorization of an Officer of Caplin Systems Limited.

Various Caplin technologies described in this document are the subject of patent applications. All trademarks, company names, logos and service marks/names ("Marks") displayed in this publication are the property of Caplin or other third parties and may be registered trademarks. You are not permitted to use any Mark without the prior written consent of Caplin or the owner of that Mark.

This publication is provided "as is" without warranty of any kind, either express or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement.

This publication could include technical inaccuracies or typographical errors and is subject to change without notice. Changes are periodically added to the information herein; these changes will be incorporated in new editions of this publication.

Caplin Systems Limited may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time.

This publication may contain links to third-party web sites; Caplin Systems Limited is not responsible for the content of such sites.