DOCUMENTATION

Nr.:

Customer:

Project: Chart-Styles - XML-Definition
in the SCHMITZM Java library

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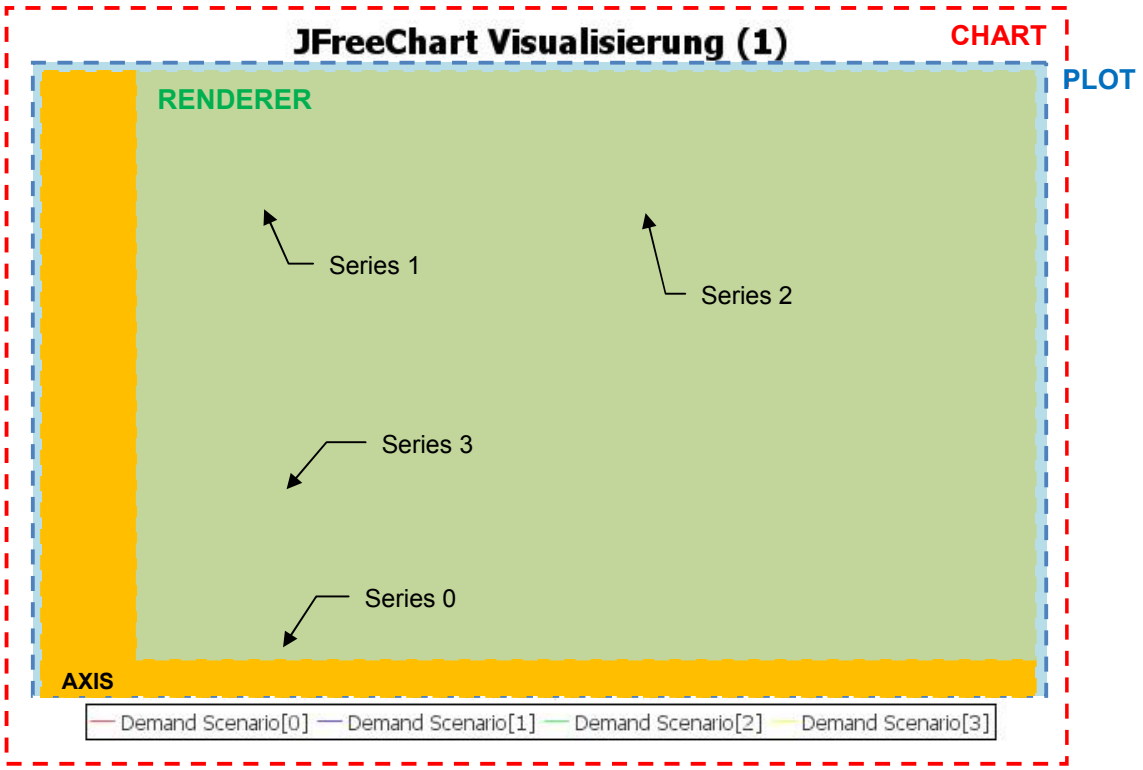
I. Content

II. Document version history

to version	date	Change
1.2	19.07.2009, Martin Schmitz	Axis title, title paint and title angle moved to an own element <title>.
1.3	31.07.2009, Martin Schmitz	Attribute “unit” for axis style. Variable count of range attributes (<rangeAttr2> eliminated). Attribute “normalize” for feature attributes. Attributes “sort” and “forceCategories” for feature domain attribute.
1.4	01.08.2009, Martin Schmitz	Attributes “legendVisible”, “legendLabel” and “legendTooltip” for <series> element of <renderer>
1.5	05.10.2009, Martin Schmitz	Element “crosshairLines” for <plot>
1.6	20.10.2009, Martin Schmitz	Attributes “centerAxisOrigin” for <plot>
1.7	22.02.2010, Martin Schmitz	Attribute “function” for <rangeAttr>

III. General terminology

Chart	The root panel is called chart. It contains the plot with the axis and the different graphs as well as the legend.
Plot	The plot contains the axis and graphs defined by the datasets.
Axis	The horizontal and vertical axis. Multiple axis are possible.
Dataset	The dataset contains the data. Multiple dataset for one plot are possible.
Series	A series is a part of the data, e.g. one row in a table, where every column defines a time step. In this case the series defines one line in the chart.
Renderer	The renderer defines the layout of one dataset (e.g. lines, points or areas). Additionally the renderer controls some properties about the dataset series (e.g. visibility or color). If the plot contains multiple datasets, also multiple renderers must be defined, e.g. to show one dataset as lines and another as points in the same chart.



IV. XML structure

```
<ChartStyle id="" type="…" orientation="…" legend="…" tooltips="…" urls="…"
                          stepped="…" stacked="…"
                          regrLineVisible="…">
      <background paint="…"/>
      <border     visible="…"/>
      <title      paint="…">chart title</title>
      <desc       paint="…">chart sub-title </desc>
      <domainAxis visible="…" unit="…">
            <title paint="…" angle="…">axis title</title>
            <valueLabels valueAngle="…" numberFormat="…" dateFormat="…"/>
      </domainAxis>
      <rangeAxis> ...</rangeAxis>
      <rangeAxis2>...</rangeAxis2>
      <renderer margin="…" selectionPaint="…">
            <series paint="…" itemLabelsVisible="…" shapesVisible="…"
                    legendVisible="…" legendLabel="…" legendTooltip="…"/>
            ...
      </renderer>
      <plot centerAxisOrigin="…">
            <foreground     alpha="…"/>
            <background     alpha="…"   paint="…"/>
            <insets         top="…"     bottom="…"   left="…"   right="…"/>
            <domainGridline visible="…" paint="…"/>
            <rangeGridline  visible="…" paint="…"/>
            <crosshairLines visible="…" paint="…"/>
      </plot>
      <featureAttributes>
            <domainAttr name="…" normalize="…" nullAliases="…" sort="…" forceCategories="…"/>
            <rangeAttr  name="…" normalize="…" nullAliases="…" function="…"/>
            <rangeAttr  name="…" normalize="…" nullAliases="…" function="…"/>
            ...
      </featureAttributes>
</ChartStyle>
```

Legend	
black colored	available for all styles
red colored	only available for some styles; see chapter V for details
green colored / italic	individual text (e.g. title)
yellow background	not yet supported; further work!

V. Element / Attribute description

Element	Description	Attribute	Description	Restrictions
`<ChartStyle>`	root element	`id`	(unique) identifier for the style	
		`type`	chart type: `bar, line, area, point, pie, gantt, timeseries, spider, scatter`	
		`orientation`	indicates the orientation the data is interpreted in: `horizontal | vertical`	only applicable for `XYPlot` and `CategoryPlot`
		`legend`	indicates whether a legend is generates in chart panel: `true | false`	
		`tooltips`	indicates whether tooltips are generates in chart panel: `true | false`	
		`urls`	indicates whether URLs are generates for chart panel: `true | false`	
		`stepped`	indicates whether line/area is stepped: `true | false`	only applicable for `BasicChartStyle` only applicable for `line` and `area` not applicable for bar (always `true`)
		`stacked`	indicates whether bars/areas are stacked: `true | false`	only applicable for `BasicChartStyle` only applicable for `bar` and `area`
		`regrLineVisible`	indicates whether a regression line is shown besides points: `true | false`	only applicable for `ScatterChartStyle`; if `true` a **second renderer** can be specified to style the regression line.

Element	Description	Attribute	Description	Restrictions
<background>	defines the background format of the whole chart panel	paint	defines the background color: RGB(<r>,<g>,<b>) or Hex-Definition or BLUE, RED, GREEN, …	
<border>	defines the border format "around" the whole chart panel	visible	indicates a border is visible: true | false	
<title>	The element body defines the chart title. The Translation format can be used!	paint	defines the text color of the title: see <background>	
<desc>	The element body defines a detailed description for the chart[1]. The Translation format can be used!	paint	defines the text color of the description: see <background>	
<domainAxis> <rangeAxis> <rangeAxis2>	The element body defines the axis title. The Translation format can be used!	visible	indicates whether the axis is visible: true | false	
		unit	defines an individual string which represents the unit for the axis values (e.g. used for tooltips)	
<title> as child of <domainAxis> <rangeAxis> <rangeAxis2>	The element body defines the axis title. The Translation format can be used!	paint	defines the text color of the axis title: see <background>	
		angle	indicates the angle the axis title is rotated with: 0 … 360 (degrees)	

[1] not yet shown in the chart directly; maybe in extra tooltip

Element	Description	Attribute	Description	Restrictions
<valueLabels>	Defines the format of the axis values.	valuesAngle	indicates the angle the axis values rare rotated with: 0 … 360 (degrees)	for NumberAxis and DateAxis only the values 0 and 90 are allowed
		numberFormat	Number format for the axis values: see java.text.DecimalFormat	only applicable for DateAxis (e.g. not for CategoryAxis)
		dateFormat	Date format for the axis values: see java.text.DateFormat	only applicable for DateAxis (e.g. not for CategoryAxis)
<renderer>	Defines the style for each of the chart's graphs. Multiple <renderer> elements are possible, but the order of the elements is important!!	margin	Defines the margin (in percentage) between the bars: 0.0 … 1.0 (percentage)	only applicable for XYBarRenderer
<series>	Defines the style for each series in the dataset. Multiple <series> elements are possible, but the order of the elements is important!!	paint	defines the color for the graph: see <background>	
		itemLabelsVisible	indicates whether a value label is visible for each note: true | false	
		shapesVisible	indicates whether a (default) shape is shown for each note: true | false	not useful for point charts!
		legendVisible	indicates whether a legend entry for the series is shown in the legend: true | false	
		legendLabel	defines label shown for the series in the legend	
		legendTooltip	defines tooltip shown for the series in the legend	

Element	Description	Attribute	Description	Restrictions
<plot>	Defines the style for the plot.	centerAxisOrigin	indicates whether the axis origin (0/0) is centered in the plot: true | false	
<foreground>	Defines the foreground of the plot.	alpha	defines the transparency: 0.0 … 1.0 (percentage)	
<background>	Defines the background of the plot.	alpha	defines the transparency: 0.0 … 1.0 (percentage)	
		paint	defines the background color of the plot: see <background>	
<insets>	Defines the border margins of the plot to the rest of the chart (e.g. legend and title)	bottom	bottom margin in pixels	
		top	top margin in pixels	
		left	left margin in pixels	
		right	right margin in pixels	
<domainGridLine> <rangeGridLine>	Defines the horizontal / vertical grid lines	visible	indicates whether grid lines are displayed: true | false	
		paint	defines the color the grid lines are displayed in: see <background>	
<crosshairLines>	Defines the crossair lines (around 0/0)	visible	indicates whether crosshair lines are displayed: true | false	
		paint	defines the color the crosshair lines are displayed in: see <background>	
<featureAttributes>	Defines feature attributes used to generate the data from FeatureCollection			

Element	Description	Attribute	Description	Restrictions
`<domainAttr>`	Feature attribute defining the data along the domain axis (X).	`name`	defines the feature attribute name	
		`normalize`	indicates whether the values are normalized before inserted into chart dataset: `true | false`	only applicable for numeric attributes
		`sort`	indicates whether the features are sorted according to the domain attribute before inserting into chart dataset: `true | false`	
		`forceCategories`	indicates whether a `CategoryDataset` is forced also for a numeric domain attribute: `true | false`	if domain attribute is not numeric always a `CategoryDataset` is used
`<rangeAttr>`	Feature attribute(s) defining the data along the range axis (Y). For each range attribute a series is created.	`name`	defines the feature attribute name	`ScatterChartStyle` only supports exactly one range attribute. For pie charts the range attributes are completely ignored.
		`normalize`	indicates whether the values are normalized before inserted into chart dataset: `true | false`	
		`function`	specifies a function, which is applied to all feature values of one category: `COUNT | SUM | SUM_ABS | AVG | MEDIAN | MIN | MAX | VARIANCE | STND_DEV | PERC`	

VI. Style objects

1. BasicChartStyle

This style can be used to style basic charts:

- line
- area
- bar

Only one Y-Axis is provided.

2. ScatterChartStyle

This style can be used to style a point chart. Only one dataset and one series is provided. Optionally a second dataset for a regression line is generated automatically.