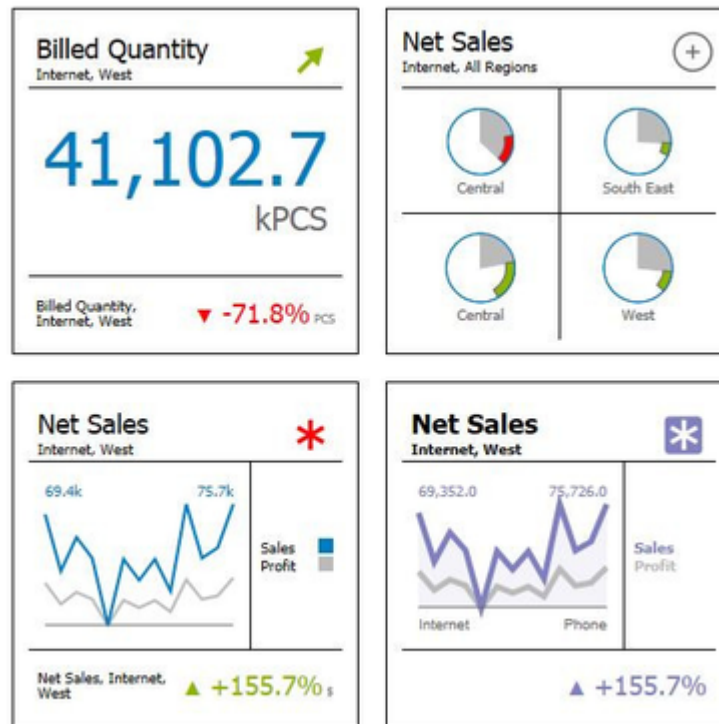


## User Manual for the graphomate tiles 2.2 for SAP Lumira Designer 2.3



Rev 2.2 - as of June 2019

<https://www.graphomate.com>

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## Introduction

With the introduction of Windows 8 Microsoft relies on the tiles concept for structured visualization of programs, apps and information on the home screen. Even SAP has taken up this idea, and with SAP Fiori, they have created a simple user interface that is build on this tile concept - adapted to the needs of operational business applications.

It was therefore obvious for us to develop a tile solution for Business Intelligence (BI) – the more so as our customers have signalled a demand. They wanted a start screen for dashboards that clearly represents the key performance indicators (KPIs).

From this highly aggregated view the user should jump – in terms of a pre-defined navigation path – on graphical overviews or detailed table views created with our *graphomate charts* and *graphomate tables* – see Figure below – from starting point to detail



After a first gathering of the customer requirements pertaining to a tile solution it was obvious that there is no single tile that can be used for all purposes: too different were the demands on the visual requirements. The solution had to be a modular construction kit, which allows users to combine different tile modules on a pre-defined layout.

The question remained how to create a uniform design of these modules and the whole tile. Here we were able to draw on the great work of John Armitage: his design proposals for analytical tiles were our aesthetic standard for a consistent style. For further reading take a look at his book "Bringing Numbers to Life: Lava and Design-Led Innovation in Visual Analytics".

In the sense of a uniform language regulation we speak in the further manual of Lumira Designer or briefly Designer.

For our *graphomate tiles* extension Lumira Designer  $\geq$  2.0 SP03 and IE 11+ are required. For further information, for example about the deployment on the Business Intelligence Platform (BIP) or SAP Netweaver, please consult the Product Availability Matrix (PAM). Please note that from 2017, we will no longer support Internet Explorer 9 and 10.

## Installation

- Before opening your old dashboards/BI apps with Designer 2.0, you need to migrate them to m mode with Design Studio 1.6.
- Our extensions for Design Studio 1.6 will also run in Designer 2.0. When starting Lumira 2.0 Designer, please do not import our graphomate extension from SAP Design Studio 1.6. Instead we suggest using the versions specifically built for Designer 2.0.

### Local installation of the extension to Designer

You have installed Designer 2.0 SP03+ on your computer.

1. Save the zipfile *graphomate\_tiles2.x.x.zip* to a folder of your choice.
2. In Designer, choose *Tools Install Extension to Lumira Designer*, click on *Archive* and select the zipfile which has been saved before.
3. Choose *Finish* to start the installation.
4. Choose *Next* and again *Next* to confirm the installation.
5. Accept the terms of the license agreement and choose *Finish*.
6. Choose *Yes* to allow a restart of Designer.
7. After the restart, the graphomate extension appears in the Component View of Designer.

### Removing the extension from Designer

In Designer choose *Help > About...*

1. Click the *Installation Details* button.
2. Select the component *graphomate tiles 2.x.x*
3. Choose *Uninstall...*
4. In the *UninstallWizard* choose *Finish*.
5. Choose *Yes* to allow Designer to restart.

### Server installation of the extension

Users need to deploy the locally installed extension to the BI platform before launching the *graphomate tiles* from the BI platform.

1. Choose in the BI Platform Mode *Tools > Platform Extensions*.
2. Select the extension *graphomate tiles* that is installed on your local computer.
3. Choose *Install on Platform*.
4. Manually restart the BI Platform Adaptive Processing Servers that host the Analysis Application Service and accept the warnings in Designer.
5. The graphomate extension appears under *Extensions Installed on Platform*.
6. Choose *Close*.
7. Again restart the BI Platform Adaptive Processing Servers that host the Analysis Application manually.

### Uninstalling the extension from the Server

1. Choose in the BI Platform Mode *Tools > Platform Extensions*.
2. Choose the *graphomate tiles*.
3. Choose *Uninstall from Platform*.
4. Confirm the uninstalling by choosing *Yes*.
5. In order to complete the uninstalling process, manually restart the BI Platform Adaptive Processing Servers that host the Analysis Application Service and accept the warnings in Designer.
6. The *graphomate tiles* is then removed from the *Extensions Installed on Platform*.
7. Choose *Close*.
8. Manually restart the BI Platform Adaptive Processing Servers that host the Analysis Application Service.

## Quick Start

You have defined a Data Source and now want to depict Data Series from this query with modules of the *graphomate tiles*.

1. Drag the component *graphomate tiles* to the canvas and bind the Data Source to this component via drag&drop. Unfortunately, it is only possible to assign one Data Source per tile (as for all Designer components).
2. Now you can configure your tile on the *General/Layout* tab: To do this, first select a layout and afterwards choose the desired modules and drag and drop them to the Builder. The properties for each module are then generated in the background. You can adjust the properties on the next tab *Modules*.
3. There you can select via *Displayed Dimensions* which dimensions and measures from the data source should be displayed in the modules. This option is strongly related to the chosen module (some modules do not require the visual display of dimensions).
4. Via the *Appearance* tab you determine the comprehensive number format for the tile.

## Properties

Basically, you have two ways in which to change the properties of *graphomate tiles*: Using the *Standard Properties Sheet*, that shows all the parameters in a structured list or via the *Additional Properties Sheet*. The latter offers a more user-friendly Interface.



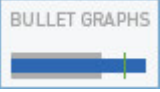
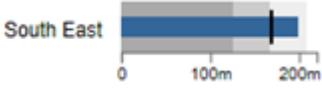



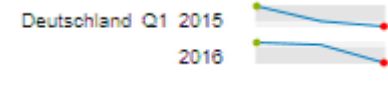
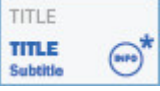


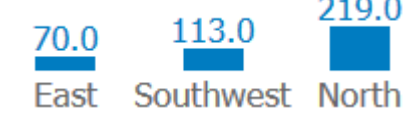

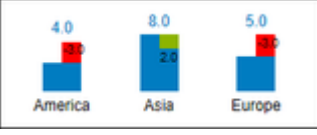





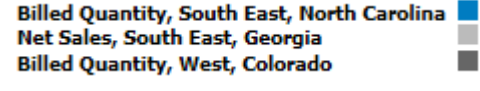

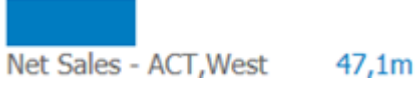
The check boxes  in front of properties in the *Additional Properties Sheet* are used to control the visibility of elements and activation of functions. The data source to be used can only be assigned via Drag&Drop to the component or to the *Standard Properties Sheet* under *Data Binding*.

By pressing the *F5* key, both the range of characters as well as the *Additional Properties Sheet* can be reinitialized. This is sometimes necessary when changes in the properties are not adopted directly in the character range.



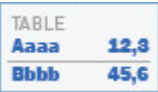







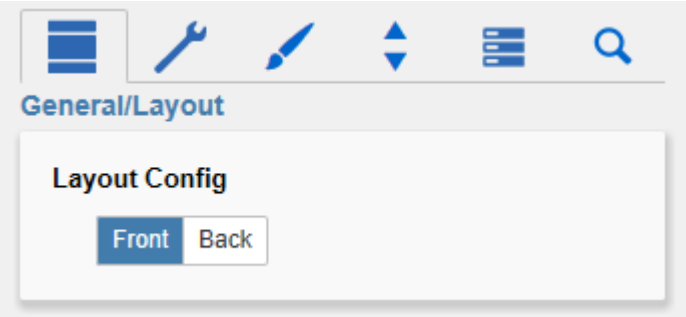
## General/Layout Tab

### Modules

Here you can see a list of all currently available modules that can be used to design your tiles. The range of modules is constantly growing with new releases of the graphomate tiles. A detailed guidance on each module and its options can be found in the description of the Modules tab.

<p>The Lines Module visualizes trends and thresholds with two lines.</p>		
<p>The Bullet Graphs Module shows up to five bullet graphs after Stephen Few's concept.</p>		
<p>With the Pies Module you can visualize percentages and a deviation in a pie chart.</p>		
<p>The Sparklines Module displays up to ten small, individually scaled line charts.</p>		
<p>The Title Module allows a data-driven definition of two title lines and an icon.</p>		
<p>The Column Module shows up to three columns with data labels.</p>		
<p>The <i>Column Module</i> displays up to three different measures including category labels and values.</p>		
<p>The Footer shows a measure with labels in one line.</p>		
<p>The KPI Module visualizes a measure as large number.</p>		
<p>The Legend Module shows up to three items for a color-based legend.</p>		
<p>The Bars Module shows analogous to the Columns Module up to three bars with data labels.</p>		



<p>The Stacked Column Module shows a data series as a stacked chart.</p>						
<p>The Table Module displays texts and figures in form of a list.</p>		<table border="1"> <tr> <td>Net Sales/Virginia</td> <td>4,005,923.0</td> </tr> <tr> <td>Billed Quantity/Virginia</td> <td>3,616,662.0</td> </tr> </table>	Net Sales/Virginia	4,005,923.0	Billed Quantity/Virginia	3,616,662.0
Net Sales/Virginia	4,005,923.0					
Billed Quantity/Virginia	3,616,662.0					
<p>The Waffles Module displays up to two data series as a segmented bar chart.</p>						
<p>The Slopegraphs Module visualizes up to three DataCellLists and shows the trend of the ranking of the individual data points.</p>						
<p>The Icon Module displays a single icon.</p>						
<p>The Text Module displays up to three lines of fully HTML capable text.</p>		<p>Net Sales, South East, Florida <b>4,376,319.0 \$</b></p>				
<p><b>Layout Config</b></p> <p>This switch can be used to select the face of the tile to be configured.</p> <p>Each face has its own configuration. This extends to modules, databinding, layout as well as layout options. However, only a single data source is permitted per tile.</p>						

Via mouse click you can choose from currently 24 different layouts that consist of up to three lines and two columns. To set a certain layout just click on the little grey icon; it then turns blue and the available layout slots are displayed beneath.

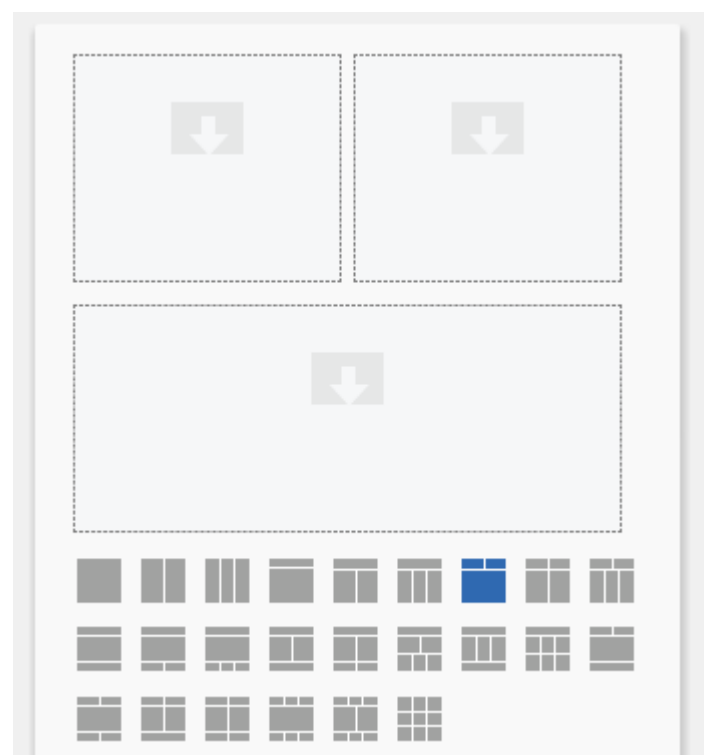
Then simply drag one of the modules above to the desired row or column of the Builder and drop it there.

According to the selected module, data connection and available options are generated in the background and displayed on the Modules tab.

Please bear in mind that Design Studio allows only one data source per tile.

Already selected modules can be moved within the *Layout Builder* via drag and drop. Assigned data and other settings are retained.

Modules can be deleted using the button with the little x in the top right corner of the module icons.



### **Layout Display Options**

Depending on the chosen layout different options are available here.

For example, the height ratio of the rows to each other can be adjusted. (A selection of 1:1:1 results in identical heights of the three rows.)

For layouts that contain more than one column, there is also the option to adjust the width ratio of the columns to each other. (A selection of 1:1 results in identical widths of the two columns.)

The option *Show Divider Lines* activates thin dividing lines between the rows of the layout.

Adjust the thickness of these dividing lines via *Divider Thickness*.

### Layout Options (Front)

Height of Top Row	<input type="text" value="1"/>
Height of Bottom Row	<input type="text" value="3"/>
Ratios First Row	<input type="text" value="1,1"/>
Ratios Second Row	<input type="text" value="1"/>
<input checked="" type="checkbox"/> Divider Lines	
Divider Thickness	<input type="text" value="1"/> px
Module Padding	<input type="text" value="5"/> px

*Module Padding* allows you to set a uniform distance that affects each individual module (green highlight in the figure on the right shows the default setting of 5 pixels). The Padding at this point has no effect on the dividing lines; for this use the Component Padding on the Appearance tab (blue highlight).



## Modules Tab

Due to the modular system of a graphomate tile, every datapoint or datalist is indicated with a number. The numbers of 'dataSingleCellx' or 'dataCellListx' in your *Additional Properties Sheet* can differ to the screenshots in this User Manual. Please be aware.

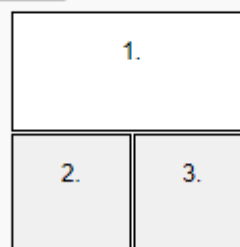
On this tab, data from the chosen data source can be assigned to the selected modules. The contents of this tab is generated from the modules chosen on the *Layout* tab.

Due to the dynamic nature of the tiles, the available script commands to control the behavior of the modules are generated only after the module selection.

The script commands can be found by clicking on the icon. A popup will appear from which the available commands can be marked and copied with the mouse. Clicking in the Additional Property Sheet outside the popup will let it vanish.

### Modules Config

Front Back





### Scripting for this module:

```
.setSelection('dataSingleCell2',
  '{"Keyfigures": "OD_NWI_IQTY", "OD_NWI_CHAN": "4"}');
.setModuleProperty(1, "title", "%5BDIMENSIONS%5D");
.setModuleProperty(1, "subtitle", "%5BDIMENSION1%5Din%5BUNIT%5D");
.setModuleProperty(1, "boldTitles", "true");
.setModuleProperty(1, "absoluteLabelHeight", "true");
.setModuleProperty(1, "wrapTitle", "true");
.setModuleProperty(1, "icon", "[None|SAPUI5 Icon|Alert|Key Point|Main Point|Added|Average|Change|Correlation|Arrow Right|Arrow Up|Arrow Down|Harvey Ball 0%|Harvey Ball 25%|Harvey Ball 50%|Harvey Ball 75%|Harvey Ball 100%]");
.setModuleProperty(1, "iconColorSelect", "[Good Color|Neutral Color|Bad Color|Custom Color]");
.setModuleProperty(1, "customColor", "#666666");
.setModuleProperty(1, "ui5IconId", "");
.setModuleProperty(1, "horizontalPosition", "[Left|Center|Right]");
```

By clicking on the dropdown menu, you can choose the Displayed Dimensions from the metadata to be used in the module.

### Displayed Dimensions

With a click on , you can select data from the data source to be used with the module. A click on  will delete the selection.

To easily identify the assigned data property, its name is displayed in brackets after the dimensions of the current selection (e. g. dataSingleCell2).

In certain modules (e. g. Title Module, Footer Module), these can be addressed via a set of wildcards. The following wildcards are available:

[DIMENSIONS] – shows all dimensions

[DIMENSIONn] – shows the n-th dimension (up to DIMENSION6)

[SCALE] – shows the scaling factor

[UNIT] – shows the unit

[VALUE] – shows the value of a single data cell

**dataSingleCell2**

Title [DIMENSIONS]

Subtitle [DIMENSION1]i

Bold Titles

Absolute Label Height

Wrap Title




Icon None

Icon Color Neutral Colr

Custom Color

SAPUI5 Icon Id

Horizontal Position Left

dataSingleCell2
  

Title [DIMENSIONS]

Subtitle [DIMENSION1]i

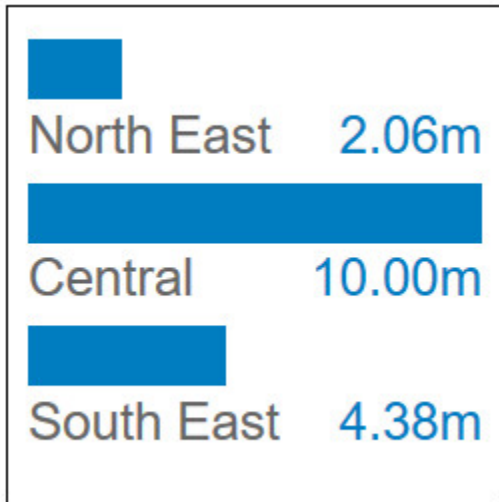
**Title** [DIMENSIONS]

**Subtitle** [DIMENSION1]i

**Net Sales - ACT, West**

Net Sales - ACT in k\$

## Bar Module



Use the *Bar Module* to display up to three different measures including category labels and values. The categories displayed correspond to the selected *Display Dimensions*.

*Max. Bar Height* and *Max. Label Height* govern the behavior of the module when the tile is resized; bars and labels will scale up to the determined heights in pixels

If the option *Absolute Label Height* is activated, the labels do not scale with the size of the tiles; instead the entry in *Max. Label Height* is used as the font size.

*Scaling Helper* will display a help line at the specified *Scaling Helper Value*.

5. Bar Module

Scripting Options

Displayed Dimensions

Measures  Continent  ▼

dataSingleCell7 ...

dataSingleCell8 ...

dataSingleCell9 ...

Max. Bar Height  px

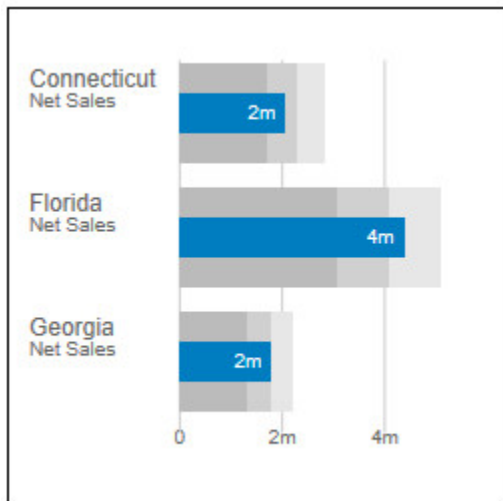
Max. Label Height  px

Absolute Label Height

Scaling Helper

Scaling Helper Value

### Bullet Graph Module



The *Bullet Graph Module* corresponds to our graphomate bullet graphs extension. It is based on Stephen Few’s conceptual considerations regarding the display of KPIs.

A detailed description of all parameters would go beyond the scope of this chapter. We’d like to refer you to the full documentation of the graphomate bullet graphs here: [de/en](#).

The following options specifically apply to the graphomate tiles:

The option *Start Element* determines the first element in the assigned data series to be displayed.

The dropdown box *Number of Elements* governs the number of bullet graphs to be displayed.

With the checkbox *Display Category Labels*, the headers can either be shown or hidden.

*Suppress Sums* excludes all sums from the selected data series.

2. Bullet Graph Module

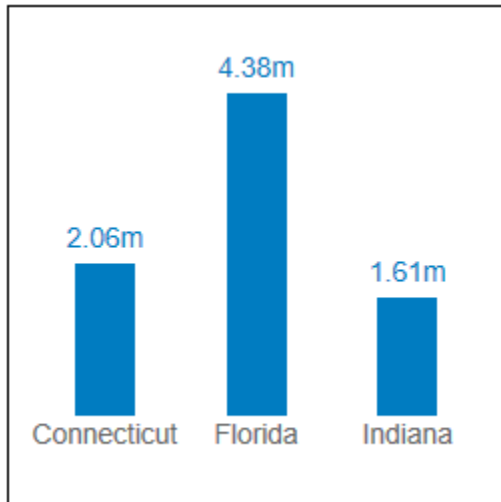
Scripting Options

Displayed Dimensions

Measures  Continent  v

dataCellList1	
dataCellList2	
dataCellList3	
dataCellList4	
dataCellList5	
Percentage of Lower Threshold	<input type="text" value="0.75"/>
Percentage of Higher Threshold	<input type="text" value="1.25"/>
Start Element	<input type="text" value="1"/>
Number of Elements	<input type="text" value="3"/> v
<input checked="" type="checkbox"/> Category Labels	
<input type="checkbox"/> Suppress Sums	

## Column Module



Use the *Column Module* to display up to three different measures including category labels and values. The categories displayed correspond to the selected Display Dimensions.

*Max. Column Height* and *Max. Label Height* govern the behavior of the module when the tile is resized; bars and labels will scale up to the determined heights in pixels

If the option *Absolute Label Height* is activated, the labels do not scale with the size of the tiles; instead the entry in *Max. Label Height* is used as the font size.

Checking *Scaling Helper* will display a help line at the specified *Scaling Helper Value*.

Category Labels in more than one row are possible with the option *Multi Line Category Labels*.

2. Column Module

Scripting Options

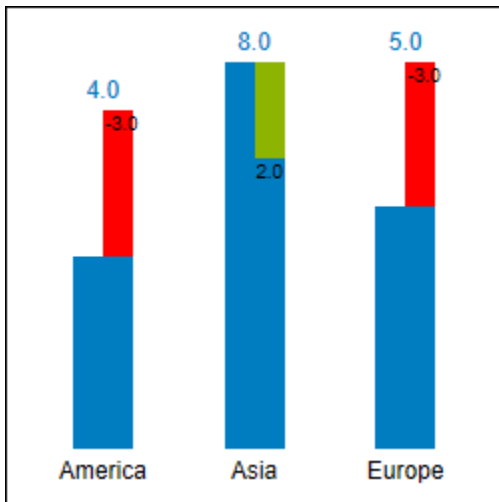
Displayed Dimensions

Measures | Continent | v

dataSingleCell2	...
dataSingleCell3	...
dataSingleCell4	...
Max. Column Width	<input style="width: 40px;" type="text" value="30"/> px
Max. Label Height	<input style="width: 40px;" type="text" value="30"/> px
<input type="checkbox"/> Absolute Label Height	
<input type="checkbox"/> Scaling Helper	
Scaling Helper Value	<input style="width: 100px;" type="text" value="100"/>
<input type="checkbox"/> Multi Line Category Labels	



### Column Series Module



Use the *Column Module* to display up to three different measures including category labels and values. The displayed categories correspond to the selected Display Dimensions.

*Max. Column Height* and *Max. Label Height* govern the behavior of the module when the tile is resized; bars and labels will scale up to the determined heights in pixels

If the option *Absolute Label Height* is activated, the labels do not scale with the size of the tiles; instead the entry in *Max. Label Height* is used as the font size.

Checking *Scaling Helper* will display a help line at the specified *Scaling Helper Value*.

If the *Multi Line Category Labels* option is activated, the category labels are wrapped so that they are positioned one below the other.

With *Start Element* you determine the value from which you want to display the values from your data source.

With *Number of Elements* you can specify how many bars are to be displayed. You can display at least one or a maximum of five.

The color of the labels of the integrated deviations can be changed on the Appearance Tab under *Color Configuration*.

#### 4. Column Module (Series)

Scripting Options

Displayed Dimensions

Measures	Continent	
dataCellList1		
dataCellList2		
Max. Column Width	<input type="text" value="30"/>	px
Max. Label Height	<input type="text" value="10"/>	px
<input type="checkbox"/> Absolute Label Height		
<input type="checkbox"/> Scaling Helper		
Scaling Helper Value	<input type="text" value="100"/>	
<input type="checkbox"/> Multi Line Category Labels		
Start Element	<input type="text" value="1"/>	
Number of Elements	<input type="text" value="3"/>	

## Footer KPI Module



This module is used to display a single KPI (Measure) together with its metadata

If an accompanying *Comparative Measure* is chosen, the deviation between these two can be displayed, either as absolute value or percentage. This can be set with the *Value Display* option.

You can also use the manual input of values (*Manual Measure* and *Manual Comparative Measure*); these fields override the values from the data assignment.

The input in *Text Input* is shown in front of the measure. The metadata from the data source can be inserted in the text fields with wildcards; by default all dimensions are displayed in this module.

The checkbox *Increase is Good* governs whether positive deviations will be displayed in red or green.

*Units* and *Scaling Factor* will display or hide unit or scaling factor from the data source.

5. Footer KPI Module

Scripting Options </>!

Displayed Dimensions

es ⊗ Continent ⊗ Country ⊗ ⌵

dataSingleCell7 ... ✕

dataSingleCell8 ... ✕

Manual Measure

Manual Comp. Measure

Text Input

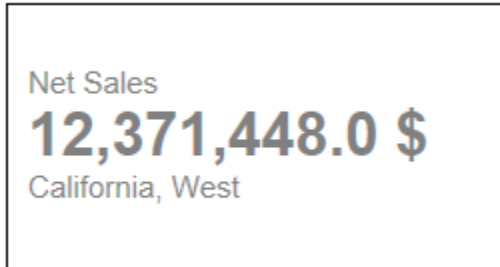
Value Display  ⌵

Increase Is Good

Units

Scaling Factor

## Free Text Module



The Free Text Module shows up to three lines of plain text. Wildcards can be used to extract and display metadata.

The input boxes *Text Line x* take one line of text each.

Fontsizes per row can be adjusted with the properties *FontSize Line x*.

For bold formatting, the checkbox *Bold Titles* needs to be activated.

If the checkbox *Wrap Texts* is activated, texts exceeding the space limit will be wrapped, resulting in several lines of texts. Otherwise, they will be abbreviated with "...".

The dropdown boxes *Vertical Position* and *Horizontal Position* influence the positioning of the text lines within the module.

1. Free Text Module

Scripting Options

Displayed Dimensions

Measures  Continent  ▼

dataSingleCell11 ...

Text Line 1 First Line

Text Line 2 Second Line

Text Line 3 Third Line

FontSize Line 1 15 px

FontSize Line 2 15 px

FontSize Line 3 15 px

Bold Texts

Wrap Texts

Vertical Position Top ▼

Horizontal Position Left ▼

## Icon Module



The Icon Module can be used to depict a single icon. This can be chosen from 19 predefined SVG symbols or the full set of SAP UI5 icons.

Use the dropdown box *Icon* to choose the desired icon.

*Icon Color* governs whether one of the component-wide colors or an individually configurable color is used. If "Neutral Color" is chosen, the "Text Color 2" will be used.

The field *SAPUI5 Icon Id* allows to insert an icon of the *SAPUI5* library, for example, `e00a` for a synchronize button. To display the icon, select *SAPUI5 Icon* under *Icon* and write the icon ID into the appropriate field.

*Max. Size* is the maximal size of the icon in px. If the slot is too small, the icon is reduced in size proportionally.

The dropdown boxes *Vertical Position* and *Horizontal Position* influence the positioning of the text lines within the module.

Please only use the icons from the namespace `sap-icon://`.

9. Icon Module

Scripting Options

Displayed Dimensions

Measures x Continent x v

<code>dataSingleCell10</code>	<span style="font-size: small;">...</span> <span style="font-size: small;">x</span>
Icon	Alert <span style="font-size: small;">v</span>
Icon Color	Neutral Colc <span style="font-size: small;">v</span>
Custom Color	<div style="width: 20px; height: 15px; background-color: #333; border: 1px solid #ccc;"></div>
SAPUI5 Icon Id	<input style="width: 100%;" type="text"/>
Max. Size	50 <span style="font-size: small;">px</span>
Vertical Position	Center <span style="font-size: small;">v</span>
Horizontal Position	Center <span style="font-size: small;">v</span>

## KPI Point Module



The *KPI Point Module* displays a single measure. The size of the number is scaled according to the available space.

The options correspond largely with those of the *Footer KPI Module*; in addition, a *Max Font Size* can be set. The size of the displayed number will not exceed the determined font size.

The checkbox *Increase is Good* governs whether positive deviations will be displayed in red or green.


*Units* and *Scaling Factor* will display or hide unit or scaling factor from the data source.

The option *Metadata Below Value* allows to place the additional information below the value itself.



The option *Show As Percent* gives the opportunity to display a percentage sign in the size and display form of the units.



The option *Replace Null with 0* gives the opportunity to replace zero values with a 0, if this is desired.



4. KPI Point Module

Scripting Options 

Displayed Dimensions


Measures  Continent 

dataSingleCell5  

dataSingleCell6  

Manual Measure

Manual Comp. Measure

Value Display **Measure** 

Max Font Size  px

Increase Is Good

Units

Scaling Factor

Metadata Below Value

Show As Percent

Replace Null with 0

## Legend Module



The *Legend Module* can be used to display up to three keys together with the assigned colors.

The keys (*Entry 1 to 3*) can be either entered manually, or can be generated using the existing [wildcards](#). If wildcards are used, it is necessary to assign data first, so metadata are available.

To hide a key, simply empty the input field.

The colors to be displayed can be defined either with the dropdown boxes *Color Key 1 to 3* (The colors themselves can be changed on the *Appearance* tab.). Alternatively you can choose own colors with the fields *Custom Color 1 to 3* (for these colors, choose *Custom Color* in the fields *Color Key*).

The checkbox *Bold Text* will format the keys in ... well, bold.

The position of the colored squares can be determined with the option *Colored Boxes*. If *None* is selected, no squares are displayed, but the keys themselves are colored accordingly.

9. Legend Module

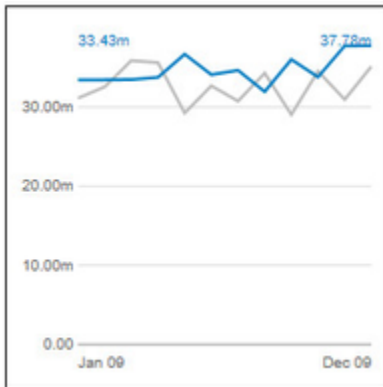
Scripting Options </>!

Displayed Dimensions

Measures X    Continent X    v

dataSingleCell13	... X
dataSingleCell14	... X
dataSingleCell15	... X
Entry 1	New Entry 1
Entry 2	New Entry 2
Entry 3	New Entry 3
Color Key 1	Data Color : v
Color Key 2	Data Color : v
Color Key 3	Good Color v
Custom Color 1	<span style="display: inline-block; width: 15px; height: 15px; background-color: black; vertical-align: middle;"></span>
Custom Color 2	<span style="display: inline-block; width: 15px; height: 15px; background-color: #333; vertical-align: middle;"></span>
Custom Color 3	<span style="display: inline-block; width: 15px; height: 15px; background-color: #666; vertical-align: middle;"></span>
<input type="checkbox"/> Bold Text	
Colored Boxes	Right v

### Line Chart Module



The *Line Chart Module* allows the display of two data series as lines (*dataCellListx*; *second value: Secondary Measure*) and an additional *Fixed Value (dataSingleCellx)*, which can be used as threshold value.

The dropdown box *Threshold* governs which measure(s) will be used as threshold value. If a threshold is chosen, the difference area between *Primary Measure* and threshold will be displayed colored. Depending on the selection, either the differential area between *Primary Measure* and *Secondary Measure* or *Primary Measure* and *Fixed Value* is colored.

The thickness of all displayed lines can be changed with the option *Line Size*.

If the option *Threshold Excess is Good* is activated, and a *Threshold* is chosen, the positive difference area is displayed in green, otherwise in red.

The option *Primary Measure as Area* turns the chart into an area chart.

If activated, *Value Labels* displays the first and last value of the assigned *Primary Measure* at the start and end of the line chart.

*Category Labels* displays the selected dimensions below the axis; this options works analogous to Show Value Labels.

Multi Line Category Labels break a label into several rows.

*Value Axis* displays a value axis on the left side of the line chart.

During runtime, *Visible Click Handlers* displays small circles around possible jump points, when the mouse pointer hovers somewhere over the module.

*Suppress Sums* excludes all sums from the selected data series. As only one data source per tile is possible, this option can be useful if the sums are needed in another module, e. g. the *KPI Module*.

1. Line Chart Module

Scripting Options

Displayed Dimensions

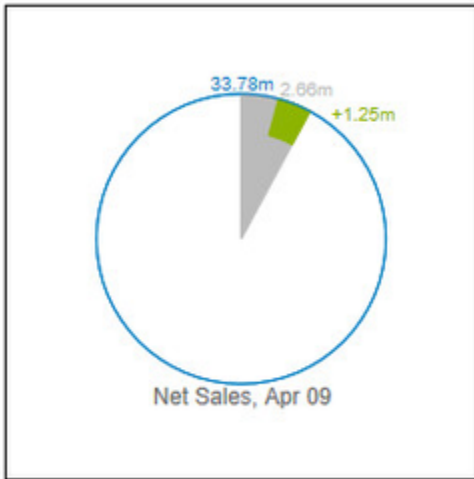
Measures 
Continent 
▼

dataCellList1	
dataCellList2	
dataSingleCell1	
Threshold	None ▼
Line Size	2 px

- Threshold Excess is Good
- Primary Measure as Area
- Value Labels
- Category Labels
- Multi Line Category Labels
- Value Axis
- Visible Click Handlers
- Suppress Sums



### Pie Module



The *Pie Module* displays a percentage including a deviation.

The value for the circle is assigned with the *Circle Data* option (*dataSingleCell17*), *Arc Data* (*dataSingleCell18*) is used to assign the comparative measure, which is displayed as circular segment. *Deviation Data* (*dataSingleCell19*) shows a value as deviation from the *Arc Data*.

The options *Category Labels* and *Value Labels* can be used to enhance the graph with metadata from the data source (*Category Labels*) and exact values.

With the checkbox *Pos. Deviation is Good*, the interpretation of the deviation can be changed; this way, negative deviations can be displayed as positive.

#### 2. Pie Module (Single)

Scripting Options

Displayed Dimensions

Measures Continent

*dataSingleCell17*

*dataSingleCell18*

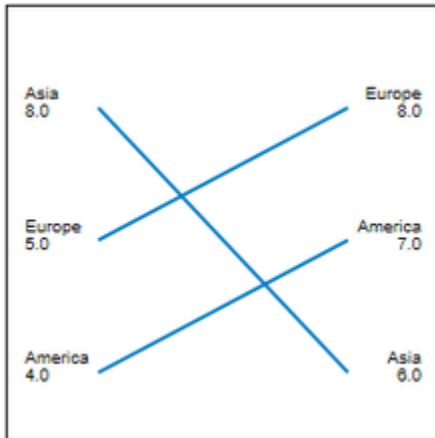
*dataSingleCell19*

*Category Labels*

*Value Labels*

*Pos. Deviation is Good*

## Slopegraphs Module



The Slopegraphs module basically corresponds to our extension [graphomate slopegraphs](#). It visualizes up to three DataCellLists and shows the trend of the ranking of the individual data points.

*Number of Elements* limits the entries to be displayed to a maximum.

The entry in *Start Element* determines with which element the display of the slopegraphs begins. If 5 is entered here, the first slopegraph is generated from the fifth line, lines 1-4 are skipped.

*Suppress Sums* excludes any totals in the data source from the display.

*Trend* shows the trend of the connecting lines by coloring them.

*Negative is Good* inverts the colors of the trend lines.

The thickness of the lines can be set using the *Slope Thickness* property.

The *Ascending Order* option can invert the sorting sequence.

### 3. Slopegraphs Module

Scripting Options

Displayed Dimensions

Measures

dataCellList10

dataCellList11

dataCellList12

Number of Elements

Start Element

Suppress Sums

Trend

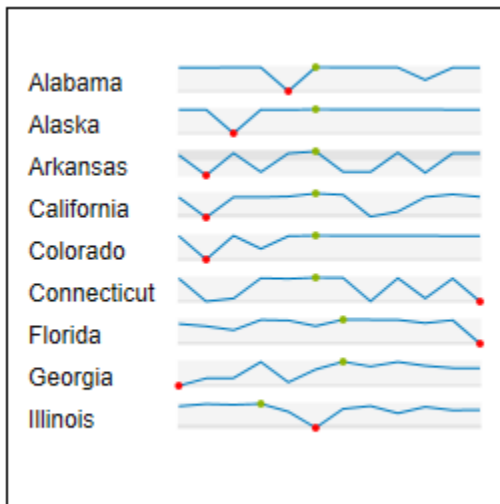
Negative is Good

Slope Thickness

px

Ascending Order

## Sparklines Module



The *Sparklines Module* largely corresponds to our [graphomate sparklines](#) component. It visualizes up to ten data series as "word-sized graphics". As per default, the *Sparklines Module* uses the full result set as data input; however, with  the button, a smaller selection can be made. Minimum and maximum in each sparkline are depicted as red/green dots. Each individual sparkline is scaled to its own minimum and maximum; the two grey bars in the background of the sparklines give orientation aid where the depicted data is located in the overall data set. In the example above, the data for Arkansas ist located in the upper third of the result set, whereas Alabama and Alaska are located near the bottom.

*Number of Elements* This options governs the number of lines of data that are used to generate sparklines.

The entry in *Start Element* governs the first element in the input data to be displayed. If e. g. a 5 is entered, the first sparkline is generated from the fifth line of data, lines 1 to 4 are left out.

With the option *Category Labels*, category labels in front of the sparklines can be toggled on or off.

*Suppress sums* excludes sums from the data to be displayed.

*Data in Rows* governs whether the input result set is interpreted in rows or columns.

4. Sparklines Module

Scripting Options

Displayed Dimensions

Measures  Continent  v

dataSet

Number of Elements  v

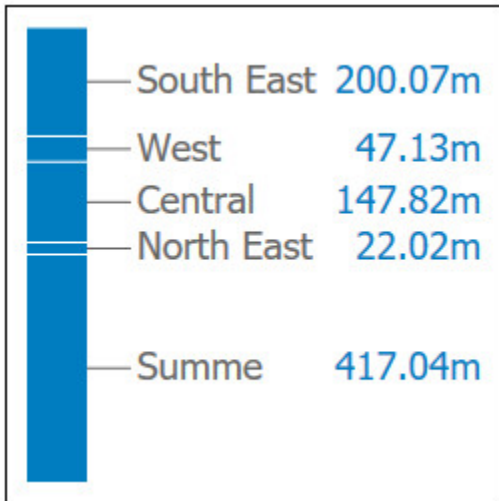
Start Element

Category Labels

Suppress Sums

Data in Rows

## Stacked Column Module



Use the *Stacked Column Module* to display a data series as a stacked chart. The categories displayed correspond to the selected *Displayed Dimensions*.

*Column Width*, *Max. Label Height* and *Absolute Label Height* work analogous to the *Columns* or *Bar Module*.

If the option *Graded Colors* is activated, the stack elements are no longer colored monochrome with white dividing lines, but as color gradations of *Data Color 1* (defined on the *Appearance Tab*).

If *Negative Stacks* is activated, and the connected data series contains negative values, these are sorted to be at the bottom of the stacked bar. In addition, a small indicator is displayed at the baseline.

### 6. Stacked Column Module

Scripting Options

Displayed Dimensions

Measures

Continent

dataCellList5

Column Width  px

Max. Label Height  px

Absolute Label Height

Graded Colors

Negative Stacks

## Table Module

Alabama	\$ 316.76k
Alaska	488.50k
Arkansas	113.21m
California	12.37m
Colorado	675.17k
Connecticut	2.06m
Florida	4.38m
Georgia	1.79m

The *Table Module* can be used to display several measures in a tabular form, either as absolute values or percentage (*Value Display*).

*Color Display* governs the text color of the table.

The option *Start Element* can be used to determine the first element in the data series to be displayed. If e. g. a 5 is entered, the table starts with the 5th element in the data series; elements 1 to 4 are skipped.

*Number of Elements* narrows the displayed elements to the number entered.

With *Max. Font Size*, the maximal font size is determined; up to this value (in pixels), the text will scale with the tile.

If the options *Units* or *Scaling Factor* are active, the table will show these preceding the first value, provided they are contained in the data source.

For ease of reading, the option *Alternating Background Color* can be used to toggle light-grey bars in the background of every other line.

7. Table Module

Scripting Options

Displayed Dimensions

Measures 
Continent 
▼

dataCellList6

Value Display Measure ▼

Color Display Text Color 2 ▼

Start Element 1

Number of Elements 5

Max Font Size 12 px

Units

Scaling Factor

Alternating Background Color

## Title Module



The *Title Module* is text component with either one or two rows, and an optional icon.

As described above, the metadata from the data source can be inserted in the text fields with wildcards; alternatively, the texts can be entered manually.

For bold formatting, the checkbox *Bold Titles* needs to be activated.

If the option *Absolute Label Height* is activated, both lines of text use the global font sizes (*Appearance Tab*). If the option is deactivated, the text size is scaled down if necessary.

If the checkbox *Wrap Titles* is activated, texts exceeding the space limit will be wrapped, resulting in several lines of texts. Otherwise, they will be abbreviated with "...".

The Icons to be displayed in the right of the module, as well as their color, can be set either manually or via scripting. To choose manually, select the desired icon from the dropdown box. The size of the displayed icons scales with the font sizes of title and subtitle. These can be set in the [Appearance tab](#).

The field *SAPUI5 Icon Id* allows to insert an icon of the *SAPUI5* library, for example, e00a for a synchronize button. To display the icon, select *SAPUI5 Icon* under *Icon* and copy the Icon ID into the appropriate field.

In the dropdown box with the label *Horizontal Position* you can select how the title should be displayed: either left-aligned (standard), center-aligned or right-aligned.

If *Absolute Label Height* is deactivated, the option *Wrap Title* is ignored; also, inline HTML tags will not be interpreted.

In the icon explorer, the SAPUI5 icon ID could be shown with a prefix for hexadecimal encoding. The id needs to be entered without the prefix; please use e. g. "e00a" instead of "&#xe00a".

7. Title Module

Scripting Options

Displayed Dimensions

Measures  Country  v

dataSingleCell20 ... x

Title New Title

Subtitle New Subtitle

Bold Titles

Absolute Label Height

Wrap Title

Icon None v

Icon Color Neutral Colr v

Custom Color

SAPUI5 Icon Id

Horizontal Position Left v

### Waffle Module



The *Waffle Module* depicts up to two data series as segmented stacked bars ("waffles").

The option *Values Labels* toggles the display of the underlying values.

With *Category Labels*, category labels can be toggled on or off.

*Number of Elements* This options governs the number of lines of data that are used to generate waffle bars.

The entry in *Start Element* governs the first element in the input data to be displayed. If e. g. a 5 is entered, the first bar is generated from the fifth line of data, lines 1 to 4 are left out.

*Suppress sums* excludes sums from the data to be displayed.

The option *Axis Alignment* governs whether the bars are aligned with the left component border ("Leftbound"). If "Center" is chosen, the 0-axis is located in the center; in this case, the bars will be drawn from the center to the left and to the right.

With the option *Calculation Base*, the interpretation of the input data as either absolute or percentual is determined.

The value *Units per Box* is only used if "Absolute" is chosen as *Calculation Base*. It is used as calculation basis for a single box in the waffle pattern. If e. g. a value of 4500 is to be depicted, and 100 is specified as *Units per Box*, the bar will contain 45 little squares; an input of 1000 results in 4.5 squares.

The value in *Percent per Box* is applied if "Percentage" is chosen as *Calculation Base*. In this case, the sum of both data series for each pair of bars is interpreted as 100%; an input of 1 results in 100 boxes for both series, an input of 5 results in 20 boxes for both series.

8. Waffle Module

Scripting Options </>!

Displayed Dimensions

Measures Continent v

dataCellList15 ... x

dataCellList16 ... x

Value Labels

Category Labels

Number of Bars 3 v

Start Index 1

Suppress Sums

Axis Alignment Center v

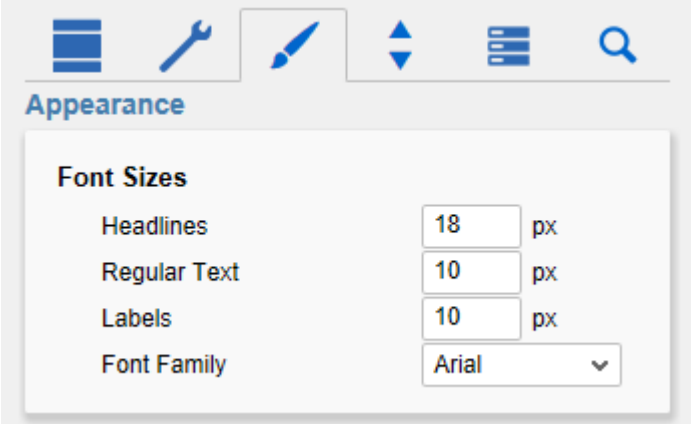
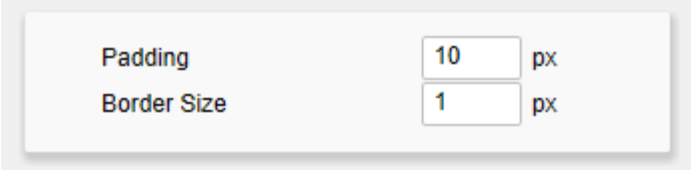
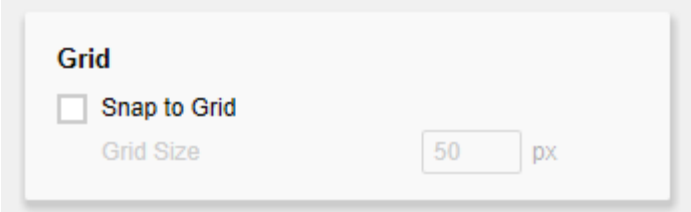
Calculation Base Absolute v

Units per Box 1

Percent per Box 1



## Appearance Tab

<p><b>Font Sizes</b></p> <p>In this section, the <i>font sizes</i> used throughout the tiles component can be adjusted. All inputs are in pixels. Likewise, the <i>font family</i> can be changed here.</p>	 <p><b>Font Sizes</b></p> <p>Headlines 18 px</p> <p>Regular Text 10 px</p> <p>Labels 10 px</p> <p>Font Family Arial</p>
<p><b>Padding</b></p> <p>The padding defined here affects the space between the border of the overall component and the modules contained within (blue frame in the picture on the right). Thus, it also effects the divider lines between the modules. Individual module paddings can be adjusted on the <i>General/Layout</i> tab.</p> <p><b>Border Size</b></p> <p>This property governs the border size of the component. If a border size of 0 is specified, no border will be displayed.</p>	 <p>Padding 10 px</p> <p>Border Size 1 px</p>
<p><b>Grid</b></p> <p>The option <i>Snap to Grid</i> activates a grid function; if checked, the size of the drawing area can only be changed in the intervals determined in the Grid Size input field.</p>	 <p><b>Grid</b></p> <p><input type="checkbox"/> Snap to Grid</p> <p>Grid Size 50 px</p>

### Value Format

In this section, the format of all value labels is determined:

- **Basic**  
Here, you can change the presets for absolute and percentage value according to *numeral.js*. *Locale* changes the country setting. If set to *AUTO*, the country setting will be governed by the data source.
- **Extended**  
If a fixed format is desired for the value labels, this can be done with the extended number format. The resulting format string can be set via scripting as well. See [Number Formatting](#)

### Value Format

Basic Extended

Percentage Format

Absolute Format

Locale

Basic Format according to [numeral.js](#)

### Value Format

Basic Extended

	abs	%
Decimal Separator	<input type="text" value=","/> ▾	<input type="text" value=","/> ▾
Thousands Separator	<input type="text" value="."/> ▾	<input type="text" value="."/> ▾
Negative Sign	<input type="text" value="-"/> ▾	<input type="text" value="-"/> ▾
Scaling	<input type="text" value="1"/> ▾	<input type="text" value="1"/> ▾
Decimal Places	<input type="text" value="1"/> ▾	<input type="text" value="1"/> ▾
Prefix	<input type="text"/>	<input type="text"/>
Suffix	<input type="text"/>	<input type="text" value="%"/>

### Color Configuration

The general color configuration is defined in this section. In this way, the consistent appearance of all modules in a given tile is ascertained. Adjustable are the colors for *Good(positive)* and *Bad(negative)* values, two *text* colors and two *Data* colors as well as the color of the *Component Border* which also affects the slot divider lines. The *Component Background* fills the entire tile and the color for *Hover* shows up while hover over the tile.

### Color Configuration

Good	<input type="color" value="#90EE90"/>	<a href="#">reset</a>
Bad	<input type="color" value="#FF0000"/>	<a href="#">reset</a>
Text 1	<input type="color" value="#000000"/>	<a href="#">reset</a>
Text 2	<input type="color" value="#808080"/>	<a href="#">reset</a>
Data 1	<input type="color" value="#0000FF"/>	<a href="#">reset</a>
Data 2	<input type="color" value="#A9A9A9"/>	<a href="#">reset</a>
Component Border	<input type="color" value="#000000"/>	<a href="#">reset</a>
Component Background	<input type="color" value="#FFFFFF"/>	<a href="#">reset</a>
Hover	<input type="color" value="#FFFFFF"/>	<a href="#">reset</a>

## Behavior Tab

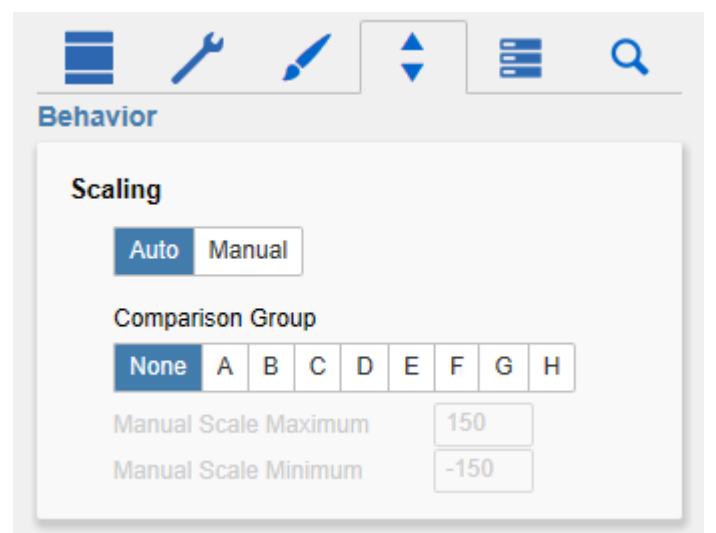
### Scaling

In this section, the scaling mode can be changed. If set to Auto, each module will be scaled according to the minima and maxima of the selected module; scaling will usually start at 0. The setting Manual enables you to enter particular minimum and maximum values.

If the scaling is set to Auto, the tile can be registered in a Comparison Group by activating the checkbox. If active, the Comparison Group will govern scaling; all components within this comparison group will be scaled identically and an indicator of the comparison group is shown during design time.

Within the BIApp, comparison groups are used globally, i. e. graphomate tables, graphomate charts and graphomate bulletgraphs which are part of the same comparison group will be scaled identically.

Note: pie modules are scaled according to their surface and are not compatible to other modules and or components within the same Comparison Group. Therefore It is advisable to use a separate Comparison Group for tiles containing pie modules.



### Flip Effect

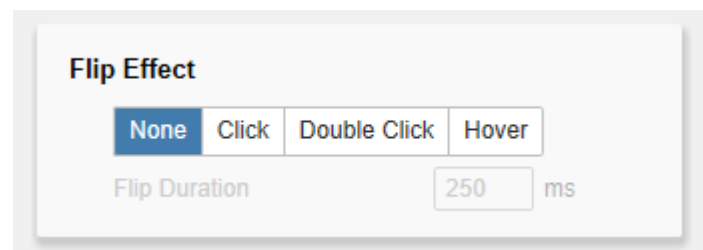
In this section, the flip effect of the tile can be configured.

The control element beneath can be used to select the desired flip action.

*Flip Duration* governs the animation duration in milliseconds. If e. g. a 1000 is entered, the animation will last for one second.

If the flip effect should only be triggered on a specific module, this can be realized with a small script in the *On Component Selected* event:

```
if (GRAPHOMATETILE_1.getSelectedModule(
) ==
1){GRAPHOMATETILE_1.toggleFlip();}
```



## Server Tab

### Server Configuration

Here you can enter the *Server URL* to which the component should connect and from which it should retrieve the templates.

If you have specified the URL to the server, a check mark indicates that a connection could be established.

If another server is used later, you can also press the button next to the Save button and edit the *Server URL*.

The hyperlink below the buttons allows you to jump to the admin panel.

### Templating Configuration

If the current settings are to be saved as a template, a new template name can be entered in the input field with the name *Create Template* and confirmed by clicking the *Save current State* button. If the naming convention entered is correct, the template is saved on the server and a toast with the corresponding message is displayed in the lower part of the Additional Property Sheet. However, if the name entered does not meet the expected naming conventions, a toast with the permitted characters is displayed accordingly.

Templates stored on the server can be retrieved and applied via the Template List. Just select the desired template and press the *Apply* button. If you want to delete a template, select the template in the list and press the *Delete* button. If changes have been made to the templates on the server side, the list must be updated via the *Refresh List* button. Changes should then be visible.

See [Server Properties](#).

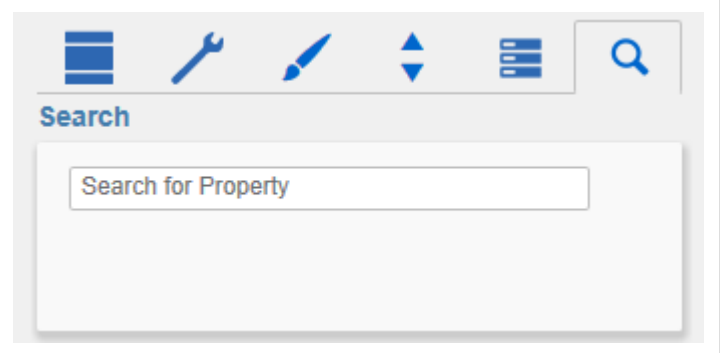
The screenshot shows a web interface for server configuration. At the top, there is a navigation bar with icons for a menu, a wrench, a pencil, a double-headed arrow, a list, and a search. Below this, the main content is divided into two sections:

- Server Configuration:** This section contains a text input field labeled "Server URL". Below the input field is a "Save" button with a pencil icon next to it, indicating an edit function.
- Templating Configuration:** This section contains a "Create Template" section with a text input field labeled "Name" and a "Save current State" button. Below this is a "Template List" section with a dropdown menu and three buttons: "Apply", "Delete", and "Refresh List".

## Search Tab

### SEARCH TAB

At this point you can search for the name, function or group of a property which are displayed at the *Additional Properties Sheet*. The appropriate settings are then displayed directly and can be changed here.

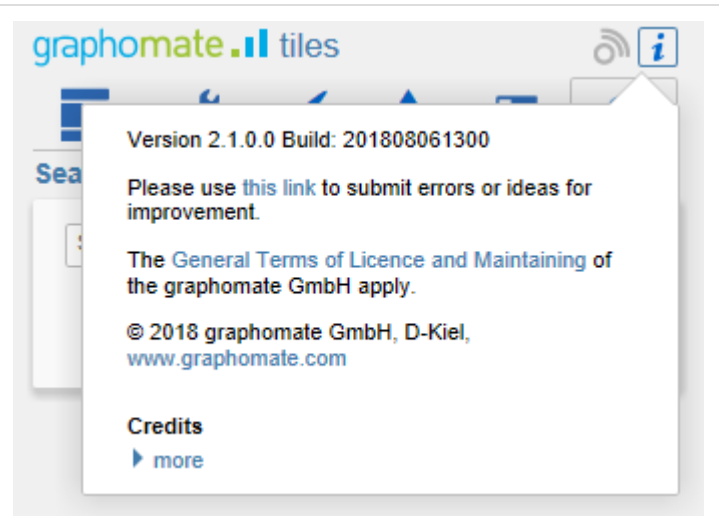


## Info Popup and Server Connection Indicator

This section contains information about the installed version of *graphomate tiles* as well as a link to a feedback form on our website.

The Credits contains an overview of the used libraries.

The icon next to the Info Popup button will indicate if the connection to the *graphomate server* is successful. In this case it will be in green color. Else it will be grey.



## Number Formatting

### Possible Input for The numeral.js Format String

Floating point		
Number	Format String	Output
10000	'0,0.0000'	10.000,0000
10000.23	'0,0'	10
-10000	'0,0.0'	-10.000,0
-0.23	'.00'	-,23
-0.23	'(.00)'	(,23)
0.23	'0.00000'	0,23000
0.23	'0.0[0000]'	0,23
1230974	'0.0a'	1,2m
1460	'0 a'	1 k
1	'0o'	1 <sup>st</sup>
Currency		
Number	Format String	Output
1.000.234	'\$0,0.00'	\$1.000,23
1000.2	0,0[.]00 \$'	1.000,20 \$
1001	'\$ 0,0[.]00'	\$ 1.001
Percentage		
Number	Format String	Output
1	'0%'	100%
-0.43	'0 %'	-43%

Source

## Possible Input for The Extended Number Format String

Percentages and absolute numbers are formatted separately. For this two format strings are used, which follow the same rules and structure. In general the strings of characters in the format string are simply replaced in the input number. Exceptions to this rule would be scaling factors and the number of decimal places.

The elements of the format string are separated by the "|" character. Format strings with less than 7 elements (or 6 "|" characters) are considered invalid and therefore ignored. In this case the standard format without scaling and with one position after the decimal point is used.

The format string consists of the following elements, the ordering is obligatory and cannot be changed:  
*Negative|Prefix|Thousands|Decimal|Scaling|PointsAfterDecimal|Suffix*

Negative	The prefix for negative numbers. The string "(") will result in the number placed inside parentheses, including eventual prefixes and suffixes. If <i>None</i> is used, the absolute number will be shown.
Prefix	A prefixed string of characters, for example a currency symbol or an identifier for the scaling factor.
Thousands	A separator for thousands.
Decimal	A separator for the decimal places.
Scaling	The scaling factor for the value. This can be given as a whole number or a power, formatted as $n^m$ . A whole number will be calculated as a power to the basis 10 internally. In case of a given power the value will be divided by it directly. Even negative numbers are possible, for example "-3" or "10 <sup>-3</sup> "; in this case the value will get adequately higher. Non numeric inputs are ignored. <i>Please note:</i> given a "0" or a "1" will result in a scaling factor of 1. The only way to achieve a scaling by 10 is to set the input to "10 <sup>1</sup> ".
PointsAfterDecimal	The number of places after the decimal.
Suffix	A suffix for the value, analogous to the prefix.



# CSS Selectors

## Overview of css classes

The following illustrations provides some of the css selectors, which can be addressed by using the *Costum CSS* in SAP Lumira Designer.

