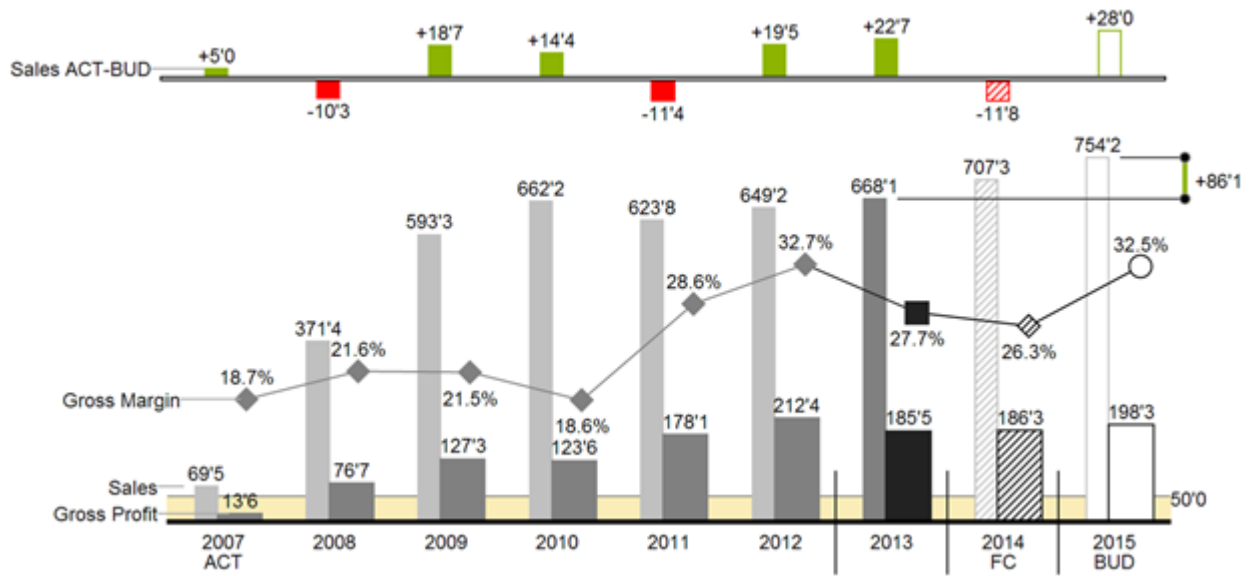


## User manual for the graphomate charts 2.6 for SAP Lumira 2.0 Designer



Version 2.6 – as of August 2017

<https://www.graphomate.com>

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## Introduction

The topic of visualization is becoming more and more important for a fast and secure communication of information. Simple but meaningful representations of information support the decision maker better in capturing correlations, patterns or outliers than tables or decorative elements could - such as pie charts or speedometers. Good information design allows a quick and effective overview on their business.

Hichert@SUCCESS is a set of rules by Rolf Hichert which build a guideline for the correct use of meaningful visualizations in reporting.

With our *graphomate charts* extension, we cast Hichert@SUCCESS into a piece of software which is easy to use and fully integrated in SAP BusinessObjects. At the moment, you can use *graphomate charts* with SAP BusinessObjects Design Studio and SAP BusinessObjects Dashboards. With our *graphomate charts* it is easy to represent the rules of Information Design according to Edward Tufte and Stephen Few.

SAP BusinessObjects Design Studio – referred to as Design Studio in the following – is the successor of the Web Application Designer (WAD) from the SAP BEx-Suite. Design Studio is tightly linked with SAP BW, allowing a complete display of the SAP BEx-Query Designer functions. Design Studio uses the web technology HTML5 to issue BI-applications in the webbrowser. HTML5 is device independent and therefore mobile applications are possible.

At the start of 2017 SAP plans to fuse SAP BusinessObject Design Studio and SAP Lumira together. The technical basis will be SAP Design Studio, the new name will be SAP Lumira designer (probably). The important thing is that our current *graphomate* extensions will continue to work. Please read this for further information: <http://bit.ly/29gq7g1>

For us, the positive side of this development is that in the long run, our Design Studio extensions will be usable in SAP Lumira discovery for self service applications as well. Currently though, it is impossible to make a reliable statement regarding the time frame. Nevertheless, with this development in mind, we have decided to discontinue the development of our *graphomate charts* and *graphomate bullet graphs for Lumira*.

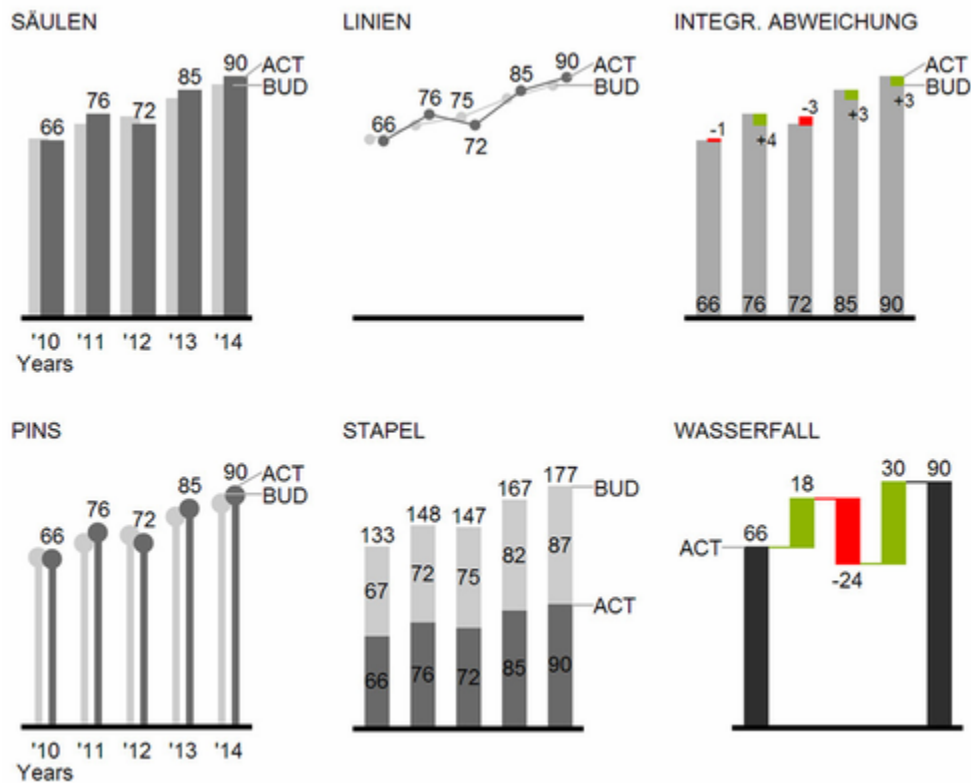
In the sense of a uniform language regulation we speak in the further manual of Lumira Designer or briefly Designer. Our products are still compatible with SAP Design Studio 1.6.

For our *graphomate charts* extension Design Studio 1.6 SP00 or higher or Lumira Designer >= 2.0 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 we will no longer support Internet Explorer 9 and 10 from 2017.

# Introductory examples

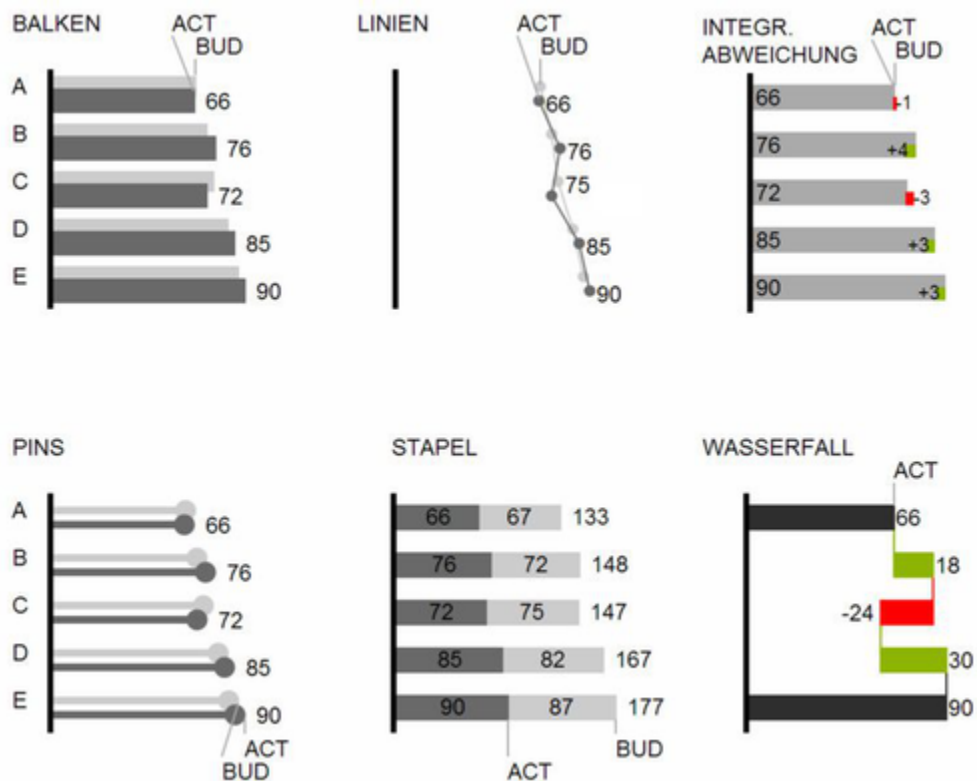
## Chart Types

graphomate charts offer a whole range of new chart types which can be extensively customized according to your reporting requirements. We distinguish between the following chart types:



We recommend these chart types for visualization of developments over time.

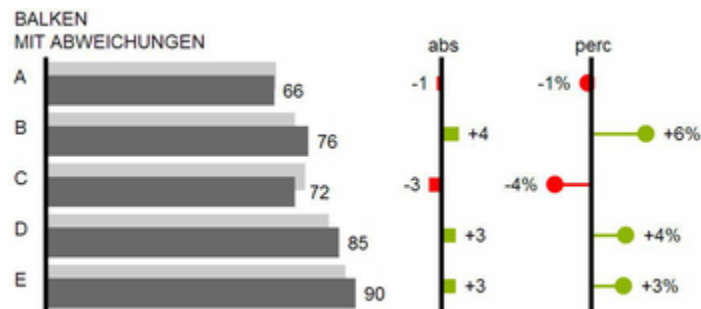
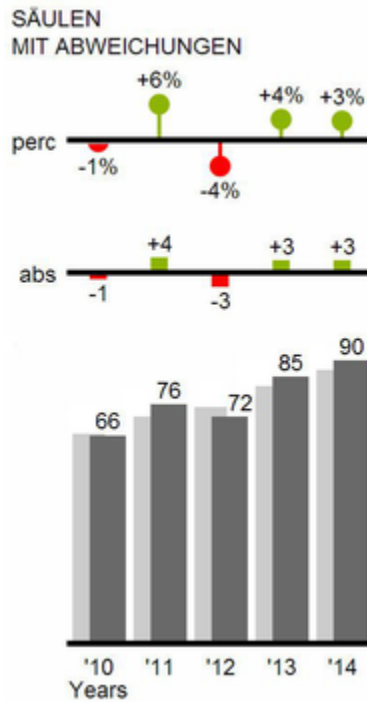
For the comparison of structures or hierarchies we recommend the use of charts with a vertical category axis:



All charts can always be used in vertical or horizontal orientation. The Comparison Group enables you to use the same scales. Each chart must be assigned to the same Comparison Group. It is possible to use up to 10 data series – either consecutively or – in a stacked chart - on top of each other. The name of a data series can be displayed at the data series itself or alternatively on the axis of the base chart.

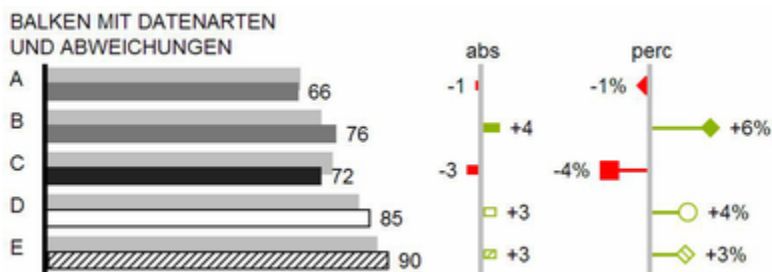
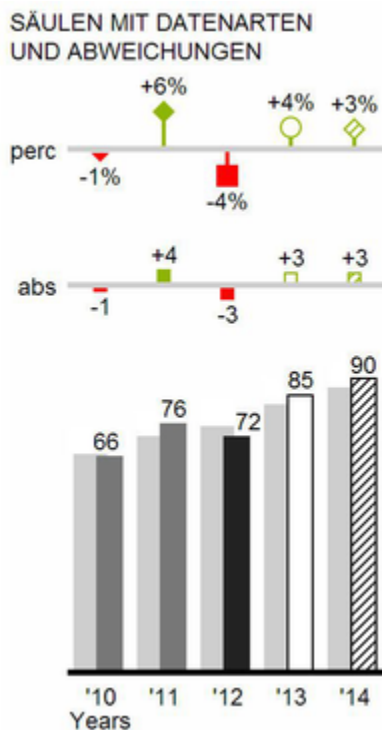
### Deviation Axes

With a simple mouse click, *graphomate charts* enables you to set additional axes above all chart types, which display the percentage or absolute deviations between two data series. Of course you can name the deviation series and display the names in the chart.



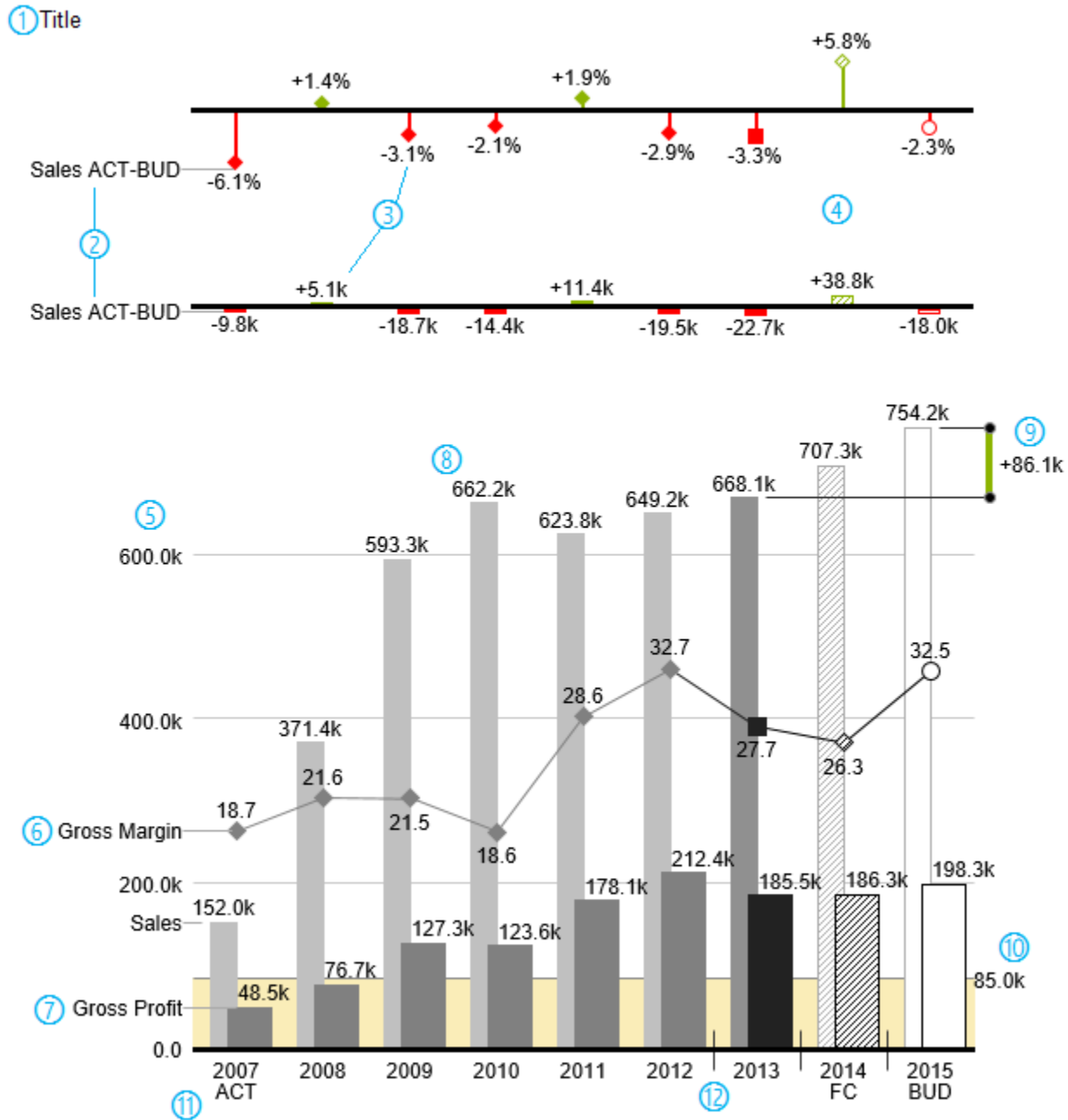
### Data Types

Furthermore, each element of a chart can be formatted independently. This is achieved by using the *Data Types*. These *Data Types* enable you to use a customized visual language for your company. *Data Types* are defined in the *Data Types Editor* and then they are attributed to each element of a *Data Series* on the tab *Data*. The color, filling, shape and width of the chart elements can be defined by using *Data Types*. Please note that the use of *Data Types* affects the deviation axes: The *Data Type* of the *Measures* can be seen in the elements, the *Data Type* of the *Base values* is used in the axis – as long as the axis has a thickness of at least 3 px.



### Visual Elements of the graphomate charts

These examples are valid for all chart types – in structure and time depictions.



1. Chart title.
2. Percentage and absolute deviation between data series with data series labels.
3. Percentage and absolute data labels can be formatted independently.
4. By using Data Types, the chart elements and axis carry information: deviation of forecast (hatched) to budget data is shown. Therefore the deviation axis is hollow.
5. A value axis with help lines can be displayed optionally for all charts.
6. Charts can be superimposed, thus enabling you to depict combination charts - in this case a line chart

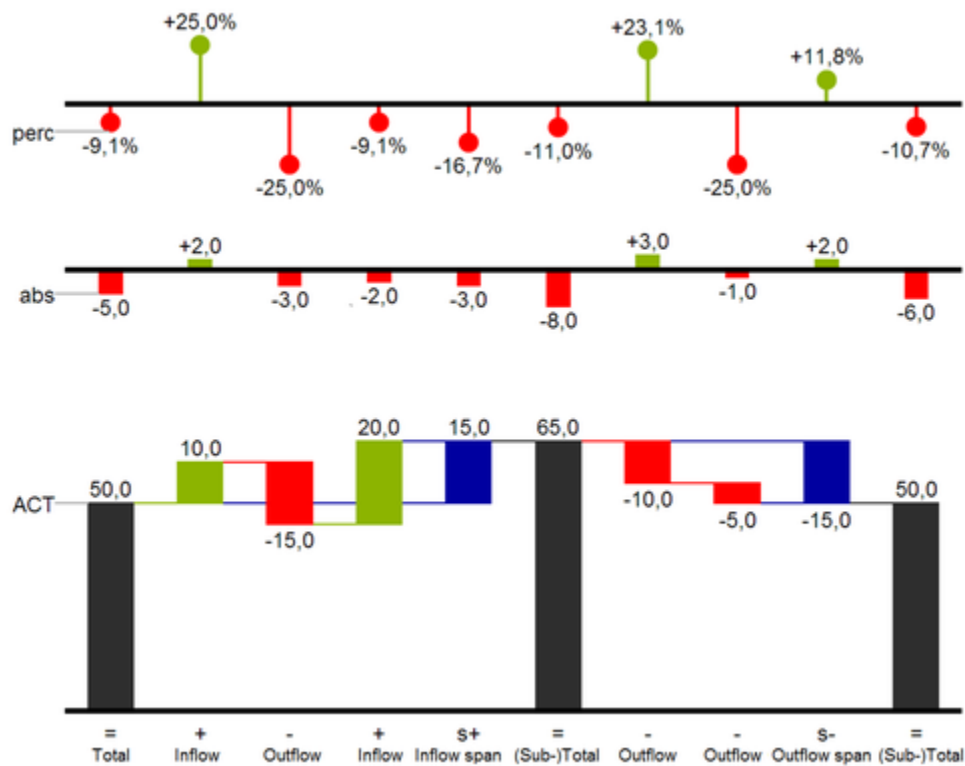


with data series labeling and data types for previous periods (grey rhombus), actual (black square), forecast (hatched rhombus) and planned data (hollow).

7. Column chart with two data series (-labels) and use of data types. Sales are shown with lighter and narrower columns, which can be controlled centrally by the use of *Data Types*.
8. Data labels are free to define. For example, use the apostrophe for the representation of millions.
9. Emphasize the difference between two elements with the function *Highlight*.
10. Scaling helper show different scales of charts.
11. Multi-line axes labels are automatically copied from the source data.
12. So-called *Separators* help to structure the category axis.

### Waterfall Charts

A waterfall chart – often also called a flying bricks chart or, in finance, a bridge shows how an initial value is increased (inflow) or decreased (outflow) by a series of values, which lead to a final value – if necessary with subtotals and spans. For a flexible use of the waterfall in *graphomate charts for Excel* an additional *Data Series* has to be defined: the *Waterfall Calculation Path*. This *Data Series* determines, whether the value to be shown is an in- or an outflow value. For further information to the *Waterfall Calculation Path* see [appendix](#). It is, of course, possible to use the waterfall horizontally or vertically, just like all other charts. Additional deviation axes are also possible. Furthermore, *Data Types* can be used for formatting. Please note that *Data Types* will overwrite the colors of in- and outflows as well as the colors of sums and spans which have been defined on the tab *Appearance*.



Above you can see a visualization of the operators for the calculation path and their effects on the elements of the waterfall chart. The following table gives some more explanations:

Function	Sign	Display
(Sub-)Total	=	Value is shown beginning at the axis.
Inflow	+	Increase of previous value and data label on the element.
Outflow	-	Decrease of previous value and data label on the element.
Inflow Span	s+	Positive overall change based on a totals item.
Outflow Span	s-	Negative overall change based on a totals item.
Neutral	0	Neutral position with own color scheme
Standard	„	Difference to previous value according to data value sign (+/-).

## 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 SP00+ on your computer.

1. Save the zipfile *graphomate\_charts2.6.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 charts 2.6.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 charts* from the BI platform.

1. Choose in the BI Platform Mode *Tools > Platform Extensions*.
2. Select the extension *graphomate charts* 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.

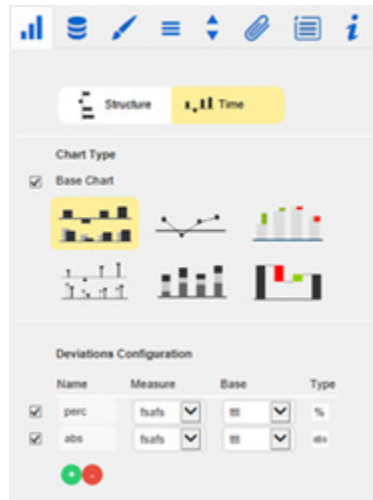
### Uninstalling the extension from the Server

1. Choose in the BI Platform Mode *Tools > Platform Extensions*.
2. Choose the *graphomate charts*.
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 charts* 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.

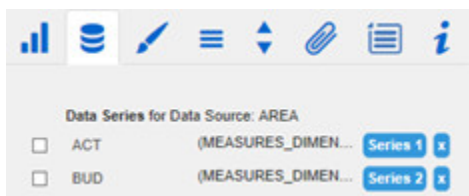
## Quick Start

You have defined a *Data Source* on basis of a SAP BW Query and now want to depict *Data Series* from this query with *graphomate charts*.

1. Drag the component *graphomate charts* to the canvas and bind the *Data Source* to this component via drag&drop.
2. Select the *Chart Type* and the deviations that you need on the tab *General*.
3. The *Checkboxes* next to the chart types and in front of the chosen deviations representations and other UI-elements give you the opportunity to control the visibility of these elements in the chart.



4. On the *Data tab* select the *Data Series* from the Query in the *Initial view* – in rows or columns – which you want to show by clicking the corresponding *button* **Series 1**. Just click on the row or column header or select a range with the *Ctrl* key pressed. The selected *Data Series* is highlighted in blue and after clicking OK it will be shown in the chart.



We recommend hiding the totals of the dimension in the Initial View of the *Data Source* with a right mouse click > *Total Display* > *Hide Totals*.

5. The category labels are captured automatically from the meta data of the selected *Data Series*.
6. Please refer to the steps above for selecting another *Data Series* **Series 2**.

This [Video](#) on youtube gives you a step-by-step description in just three minutes.

## Properties

Basically, there are two possibilities to maintain the features of *graphomate charts*: with the *Standard Properties Sheet*, which lists all parameters in a structured list or with the *Additional Properties Sheet*. The latter provides a user-friendly interface.

There are some special features, which can only be maintained on the *Standard Properties Sheet*.

The Checkboxes  next to the features in the *Additional Properties Sheet* are used to control the visibility of chart elements.

The chosen *Data Source* can only be attributed to the component via Drag&Drop or via the *Standard Properties Sheet* under *Data Binding*.

Clicking the F5 key reinitializes the canvas as well as the *Additional Properties Sheet*. This is sometimes necessary when changes in the properties are not directly accepted in the canvas.

### General Tab

#### Orientation

All charts can be used in horizontal or vertical orientation:

- horizontal for development over time,
- vertical for structure comparison.

Use the toggle button to select *Structure/Time*.

#### Chart Type

Choose the preferred chart type via mouse click on the corresponding icon. With the *Checkbox Base Chart* you can display or hide the *Base Chart*. This way, you may use deviation charts without the *Base Chart*.

#### Stacked Bar Mode

This option is visible, if the stacked bar chart is selected. It switches between the different stacked bar chart modes.

The modes are explained under *Standard Properties*.

#### Deviations Configuration

These Checkboxes activate - additionally to the *Base Chart* - axes for absolute or percentage deviations of two *Data Series*. A click on *Name* enables the renaming of the deviation series. This *Name* is also used as a legend.

Use the *dropdown boxes* to choose the *Data Series* for the calculation of deviations according to the formulas on the right. Click the button *Type* for selecting between absolute and percentage deviation.

Delete deviation series by using the red button and add new by using the green button, which will be shown above the *Base Chart*. The order of the display corresponds with the order in the *Deviations Configuration*.

### Data Tab

#### Data Series

The screenshot shows the 'General' tab of the graphomate charts interface. At the top, there is a toolbar with icons for chart types, editing, and help. Below the toolbar, the 'General' section contains a toggle for 'Structure' and 'Time', with 'Time' currently selected. The 'Chart Type' section has a checked 'Base Chart' checkbox. The 'Stacked Bar Mode' section shows several chart icons, with the 'Regular' mode selected. The 'Deviations Configuration' section includes a table with columns for Name, Measure, Base, and Type, and two checkboxes for 'perc' and 'abs'.

**General**

Structure Time

**Chart Type**

Base Chart

**Stacked Bar Mode**

Regular Negative Real Values Percent

**Deviations Configuration**

	Name	Measure	Base	Type
<input type="checkbox"/>	perc	Series: ▾	Series: ▾	%
<input type="checkbox"/>	abs	Series: ▾	Series: ▾	abs


+ -



Here you can link up to 10 *Data Series* from the *Data Source* that you want to display by clicking the corresponding button. The Checkbox next to the *Data Series* determines its visibility in the chart. Change the name of the *Data Series* by clicking on it. The given names are also used for the Data

labels. With the  button you delete the assignment of the *Data Series*.

With a click on the blue 'B' buttons you can toggle the labelling of the according series selectively.

If you click the question mark icon , you can toggle the chart type for each series separately. By default (question mark selected), the setting from the general tab is used. With this feature you can get automatic chart layering.

### Title

Enter a title for your chart at this point. If the Checkbox is activated, the Title will be shown. Line breaks are adopted. In addition the Title can be formatted with HTML tags and (in-line)CSS.

### Category Labels

Category Labels are shown in the chart, when the Checkbox is activated. Category Labels are automatically created from the meta data of the Data Source.

### Base Chart Axis Labels

Define additional axis labeling here. To show these labels the Checkboxes on the *Helper* Tab must be activated.

### Data Types

Specify here the Data Type of each element of the selected Data Series. Each element can be formatted individually.

Data Types are defined on the tab Data Types.

The entered Data Types are converted to uppercase in the background, so they are not case-sensitive in order to prevent possible sources of errors.

### Waterfall Calculation Path

To use a waterfall flexibly, it must be first determined whether the value to be displayed is either a total or an in- or outflow using an additional *Data Series*. This is carried out by using our so-called *Waterfall Calculation Path* (see input options on the right).

#### Manual Input

Clicking on more enables manual input of Data Series or Category Labels, which are then shown in the chart. Please use the point (.) here as a decimal separator.

We recommend not to use this feature anymore and to build a Custom Data Source instead.

- „=“ (Sub-)Total
- „“ Standard
- „+“ Inflow
- „-“ Outflow
- „S+“ Inflow Span
- „S-“ Outflow Span
- „0“ Neutral Position

#### Manual Data Input

▶ more

### Appearance Tab

#### Labels

Set the font size, the font family and the font color for labels in the chart. In addition, shadows with defined colors can be added to accentuate the labels if the background is colored.

#### Shadows

If activated, an area is drawn behind the Element Labels. With *Shadow color* you can define the color value.

#### Element Labels

If the Checkbox is activated, all elements of the chart will be labeled. The toggle buttons Fix/Auto determines the visibility of the labels:

- *Fix*  
*Data* labels are always visible
- *Auto*  
*Labels* are hidden or moved in case of overlaps – adjustable with the property Collision Adjustment – see in the standard properties.

#### Value Format

Select the format of the Category Labels:

- **Basic**  
Select the format of the absolute and percentage values according to guidelines of numeral.js.
- **Extended**  
If a fixed format is preferred, put the format for absolute and percentage values here. Choosing a “(“ in the box Negative Sign will show negative values in brackets: (1234). The parameter in the box Scaling is used as a divisor for scaling the data label. The resulting format string can also be set via scripting language – for further details see the [Number Formatting](#).
- **Locale**  
sets the label country format in the Basic mode. DE, FR, EN and AUTO are available options. Choosing *AUTO* the Locale is retrieved from the Data Source.

### Pick Labels

If this option is activated, the underlying options control, which labels are shown. Only those labels are shown, which meet one of the criteria. The following options can be picked:

*First*: The first label of each series is shown

*Last*: The last label of each series is shown

*Min*: The minimum value of each series is display

*Max*: The maximum value of each series is display

*Before Separators*: All values leading a separator are shown. This option depends on the setting under *separators*.

*Peaks*: When this option is checked, local minimum and maximum values are shown. What is interpreted as a minimum/maximum can be controled with the option *Minimum Peak Size in %*.

*Peaks from Leading Values*: The peak calculation only considers leading values; subsequent values are no longer considered

*Minimum Peak Size in %*: Defines, how large the difference to the neighboring values must be, to consider the value as a maximum/minimum

### Waterfall

The colors of the elements of a waterfall can be set here - corresponding to the calculation path. Please note that the use of *Data Types* overlap this standard format.

**Appearance**

**Labels**

Font Size (px)

Font Family

Font Color

**Shadows**

Shadows

Shadow color

**Element Labels**

Labels

**Value Format**

Percentage

Absolute

Format string according to numeral.js

Locale

### Deviations

Set the colors for deviations. If positive deviations between measures and base values are not regarded as positive, for example for comparisons of actual vs. budget costs, activate the *Checkbox Invert*.

### Outlier Mode

Choose the appearance of the outliers here. In the mode *Short* the outliers are shown as small triangles on the axis. In the mode *Long* they are drawn over the entire available area – according to the rules by IBCS.

### Series Styles Editor

In this editor the appearance of the Data Series is determined, as long as you do not use Data Types. Data Types overwrite the Series Styles. The handling is similar to the definition of Data Types on the Data Types tab, the name is derived from the data series name. Color, Fill and Shape determine the appearance of the elements. Shape refers to the pin heads. Navigate via mouse click through the alternative representations. Width determines the width of the elements. The values can be given in percentage of the category width as well as in absolute values in [px] – just toggle *%/abs*.

The parameter Width can only be used in bar or column charts. If necessary, please use the parameter Bar Width in the Standard Properties Sheet for the elements width of other chart types.

#### Value Format

Basic
Extended

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

**Pick Labels**


- First
- Last
- Min
- Max
- Before Separators
- Peaks
- Peaks from Leading Values


Minimum Peak Size in %

#### Waterfall

+	<input type="checkbox"/>
-	<input type="checkbox"/>
0	<input type="checkbox"/>
=	<input type="checkbox"/>
s+	<input type="checkbox"/>
s-	<input type="checkbox"/>

### Deviations

Good 







Bad 

Invert

### Outlier Mode

**Short** Long

### Series Styles Editor

Name	Color	Fill	Shape	Width	% / abs
Measures				<input type="text" value="40"/>	%
Basic Values				<input type="text" value="40"/>	%

[▶ more](#)



Several charts can be scaled identically by using the same *Comparison Group*, which is activated by the Checkbox. The *Comparison Group* will then be shown during design time on the top right corner of the chart. That way the Min and Max of the data basis in [this group](#) is used.

*Comparison Groups* are used globally within the BIApp, ie also deviation charts in the *graphomate tables* are scaled identically by using the same Comparison Group abbreviation.

Alternatively it is possible to set the Min and Max scaling values under *Manual*. Retrieve values proposes valid values!

*Chart Min* values > "0" cut the value axis. The script method *getClickedPositionValue* enables an interactive zooming.

See example in the script documentation.

*Padding* in [px] gives a margin to the chart. *Spacing* also in [px] denotes the space between base and deviation chart.

### Category Axis

Activate the Checkbox to show the category axis. *Size* defines the thickness of the axis in [px].

With *Category Width* the width can be defined as *Fix* in [px] or automatically set with *Auto*.

The parameter *Element Offset* determines the shift of elements on the *Category Axis*. Using the toggle button *%/abs* allows you to set the value in percent or absolute in [px]. Use [negative values](#) for a shift in the opposite direction.

### Data Types in Axis

If the Checkbox is activated, *Data Types* of the first *Data Series* are shown in the axes as long as the *Size* is at least 3 [px].

### Suppress Zero Labels

If the Checkbox is activated, the labels of zero values are hidden – both in the *Base Chart* and in the deviation charts.

### PNG Export Available

The screenshot shows the 'Behavior' settings panel for graphomate charts. At the top, there is a toolbar with icons for chart types, a pencil, a menu, a double-headed arrow, a paperclip, a list, and an information icon. The main panel is titled 'Behavior' and contains the following sections:

- Scaling:** Includes 'Auto' (selected) and 'Manual' buttons, a 'Comparison Group' checkbox, and a row of category labels 'A' through 'H', with 'A' selected.
- Padding (px):** A text input field containing '15'.
- Spacing (px):** A text input field containing '0'.
- Category Axis:** A checked checkbox, 'Size (px)' input (3), 'Category Width (px)' input (50), 'Auto' (selected) and 'Fix' buttons, 'Element Offset (%)' input (30), and a '%/abs' toggle with '%' selected.
- Data Types in Axis:** An unchecked checkbox.
- Suppress Zero Labels:** An unchecked checkbox.
- Export:** 'PNG Export Available' and 'Excel Export Available' checkboxes, both unchecked.

If this Checkbox is activated, at runtime on mouse-over a camera icon is displayed next to the chart, which enables you to export the chart as a PNG file. Clicking on the button opens a new window in which the chart is displayed as an image that can be copied to MS office applications.

#### Excel Export Available

If this Checkbox is activated, at runtime on mouse-over an Excel icon is displayed next to the chart, which enables you to export the chart as a JSON file. Clicking on the button automatically copies the needed data into your clipboard and you will be notified that the export was successful. If the used browser does not support the automatic copying a new browser window will open. You can simply copy its content by marking the whole content (by clicking *ctrl+a*) and then copying to the clipboard manually (by clicking *ctrl+c*). After this you will be able to import the chart in Microsoft Excel (using the *Import Chart*-button) as long as you have installed *the graphomate charts for Excel Add-in*.

#### Helper Tab

##### Series Labels

Activate the Checkboxes to show the data label on the Data Series.

##### Axis Labels

Activate the Checkboxes to show the legend at the axes.

##### Highlight

This function enables you to highlight the absolute or percentage difference between two elements. Activate the Checkbox and set an index for elements where the highlighting should start and end.

Choose between a *Single highlighting* on the side and the *highlighting of Multiple elements* above the graph. If you select Single, the first element of the list is displayed and all other elements are ignored. You can also choose whether the absolute and/or percentage values should be displayed.

##### Value Axis/Flip Value Axis



Activate the Checkbox *Value Axis* to show value axes and help lines approximately according to the interval.

Activating the Checkbox *Flip Value Axis* flips the Axis – from right to left and from top to bottom). If *Force Axis Interval* is active, the tick interval is calculated exactly according to the entered value.

### Separators

You have the option to set so-called *Separators* in the chart. These can be set automatically in case of changed Data Types or Categories, or they can be set Manually – according to the selected toggle button.

Source Row determines the category row and Series the Data Series according to which Data Type the Separators are shown. Furthermore, you can define the *Length*, *Thickness* and *Color* of the Separators in [px].

### Scaling Helper

Activate the appearance – *line* or *area* – and the position of the Scaling Helper at this point. Retrieve Value proposes valid values!

### Threshold Lines Configuration

With this panel you can configure custom horizontal lines, e.g. to indicate certain thresholds. You can define the thickness, color and style of the line and give it a label.

### Tooltips

If this Checkbox is activated, Tooltips are displayed on the chart at runtime, showing the detailed information for that item.

The screenshot shows the configuration panel for graphomate charts. At the top, there is a toolbar with icons for chart types, data, editing, menu, zoom, and help. Below the toolbar, the 'Helper' section is active, showing options for 'Series Labels' (Left / Top, Right / Bottom), 'Axis Labels' (Left / Top, Right / Bottom), and 'Highlight' (Single, Multi). The 'Value Axis' section includes checkboxes for 'Value Axis', 'Flip Value Axis', and 'Force Axis Interval', with an 'Interval' input field set to 50. The 'Separators' section is also visible, with a 'Categories' toggle selected and input fields for 'Source Row' (1), 'Length (px)' (10), 'Thickness (px)' (1), and a 'Color' selector (black).

**Scaling Helper**

Line Area

Value

Retrieve Value

**Threshold Lines Configuration**

	Label	Value	Size	Color Style
<input checked="" type="checkbox"/>	<input style="width: 60px;" type="text"/>	<input style="width: 60px;" type="text" value="100"/>	<input style="width: 60px;" type="text" value="1"/>	<div style="display: flex; align-items: center; gap: 5px;"> <div style="width: 15px; height: 15px; background-color: black; border: 1px solid black;"></div> <span>—</span> </div>
	<div style="display: flex; align-items: center; gap: 5px;"> <span style="background-color: #28a745; border-radius: 50%; width: 15px; height: 15px; display: flex; align-items: center; justify-content: center; color: white; font-size: 8px;">+</span> <span style="background-color: #dc3545; border-radius: 50%; width: 15px; height: 15px; display: flex; align-items: center; justify-content: center; color: white; font-size: 8px;">-</span> </div>			

**Tooltips**

### Context Menu Tab

In this tab you will be able to choose which options are available in the context menu. An activated checkbox means this options will be shown. The first checkbox enables or disables the context menu altogether.

Once activated the context menu will be accessible during runtime by right clicking on the component. The active operations will be usable as follows.

#### Context Menu

Mit der obersten Checkbox kann das gesamte Kontextmenü initial aktiviert werden. Ein aktives Kontextmenü lässt sich zur Laufzeit per Rechtsklick auf die Komponente öffnen und die aktivierten der folgenden Aktionen lassen sich ausführen.

#### Sorting

With *Sorting* data from the available dimensions can be sorted in ascending or descending order.

#### Filters

Allows you to filter the data by member for all available dimensions.

#### Context Sensitive Filters

**Context Menu**

**Context Menu**  
 **Sorting**  
 **Filters**  
 **Context Sensitive Filters**  
 **Filter and Hide**  
 **Clear Filters**  
 **Drilldown**  
 **Drillup**  
 **Zero Display**  
 **Member Display**  
 **Position for Totals**  
 **Total Display**

---

**Custom Event 1:**   
 **Custom Event 2:**

▶ more

Shows filters corresponding to the currently clicked dimension.

#### **Filter and Hide**

In addition to the normal filtering this operation also removes the corresponding dimension from our initial view.

#### **Clear Filters**

Resets previously set filters.

#### **Drilldown**

Adds another dimension to the component.

#### **Drillup**

Removes a dimension from the chart (this can cause an error which makes a reload necessary).

#### **Zero Display**

Sets the way zero values are displayed.

#### **Member Display**

Lets you choose the way member names are displayed (text or key).

#### **Position For Totals**

Sets the positions for each total value per dimension to be displayed before or after other values.

#### **Total Display**

Enable or disable totals for each dimension.

#### **Custom Events**

There are 10 possible events which can be linked to your own scripts. These can be defined in the *Standard Properties Sheet* and triggered using the corresponding button in the context menu. In the *Additional Properties Sheet* the names for these buttons is customizable.

All operations are executed directly on the data source, but without changing it. A reload resets all changes made with the context menu.

### Info Tab

Here you can find the version number of our *graphomate charts* as well as a link where you may report bugs or propose wishes for new features.

A list of all open-source libraries that we used can be found under *Credits*.



The screenshot shows the 'Info' tab interface. At the top, there is a toolbar with icons for chart, data, edit, menu, zoom, print, and info. Below the toolbar, the word 'Info' is displayed. The main content area features the 'graphomate .ll' logo and the 'SAP Partner' logo. The text in the info tab reads: 'charts Version: 2.6.0.10 Build: 201708231035', 'Please use [this link](#) to submit errors or ideas for improvement.', 'The [General Terms of Licence and Maintaining](#) of the graphomate GmbH apply.', and '© 2017 graphomate GmbH, D-Kiel, [www.graphomate.com](http://www.graphomate.com)'. At the bottom, there is a 'Credits' section with a 'more' link.

## Standard Properties

Some (expert) features can only be controlled in the *Standard Property Sheet*.

<b>Data Binding</b>	
<b>User Highlights</b>	With this property the list of User Highlights can be customized and readout. The user highlights can be set at runtime by pressing the Alt-Key and clicking with the mouse. That way a certain value of the chart is highlighted with a colored border. Details about the format of the list of User Highlights can be found in the script documentation.
<b>Labels</b>	
<b>Selected Members in Categories</b>	Specifies whether the members of selected measures should be displayed as a supplement in the category labels.
<b>Selected Measures in Categories</b>	Specifies whether the selected measures should be displayed as a supplement in the category labels.
<b>Category Label Rotation</b>	Specifies the angle by which the category labels are rotated. Labels are rotated counter-clockwise.
<b>Collision Adjustment</b>	This property can be used to fine tune the collision algorithm used in the AUTO mode of the Element Labels position. The smaller the value, the more sensitive it is to collisions. Also negative values are possible. (Attention: Bold labels are excluded from the collision adjustment, they always appear)
<b>Line Break Category Labels</b>	The character or string at which point Category Labels are split into several lines. For example, using a space would change the label "ACT Jan 2001" in a label with three lines.
<b>Line Break Axis Labels</b>	The character or string at which point Axis Labels are split into several lines (similar to the property Line Break Category Labels).
<b>Max Series Labels Width</b>	Maximal width of data series labels, until the point where the Padding scales, too. If this value is exceeded the labels will be cut off.
<b>Supress Zero Labels</b>	Hiding Category Labels in case of zero values.

<b>Supress Repeating Category Labels</b>	Defines in which row of the Category Labels repeating labels should be suppressed. Expects the following format "true,false,true" and alike. Signed Labels +/- sign of ALL values are shown.
<b>Use Formatted Data</b>	If <i>true</i> , formatted data from the query is used.
<b>Value Replacement: NULL</b>	If set, all NULL values are displayed as this string.
<b>Value Replacement: Zero</b>	If set, all 0 values are displayed as this string.
<b>Value Replacement: Infinity</b>	If set, all Infinity values are displayed as this string.
<b>Axes</b>	
<b>CategoryCount</b>	If this value is not equal to 0, it indicates how many categories are shown. Excessive elements are cut off and missing elements filled up with empty categories.
<b>Flip Value Axis</b>	This property flips the value axis from right to left or from top to bottom.
<b>Value Axis Tick Distance</b>	Describes the space between the ticks of the value axis. But this is more a guideline as the ticks are always positioned on "even" values.
<b>Synchronize</b>	
<b>Synchronize Padding</b>	Specifies whether the padding is adopted from the Comparison Group or whether it should be determined independently for the chart.
<b>Synchronize Scaling</b>	Specifies whether the scaling is adopted from the Comparison Group or whether it should be determined independently for the chart.
<b>Synchronize Axes Position</b>	Specifies whether the axis positions are adopted from the Comparison Group or whether these should be determined independently for the chart.
<b>Deviations</b>	

<b>Calculate Deviations from NULL</b>	Indicates whether deviations are calculated from NULL values or not. Resulting "" labels get the CSS class infinityLabel.
<b>Deviation Bar Size Factor</b>	The percentage width of the deviation bars in dependence of the element width in the Base Chart (only possible if Data Types are used).
<b>Deviation Pin Line Black</b>	Defines the color of the deviation pin line as black (or red/green).
<b>Deviations Config</b>	A JSON, which is depending on the settings of the deviations.
<b>Highlight</b>	
<b>User Highlight Colours</b>	A comma separated list of colors for the User Hightlights (highlighted values during runtime) which is switched through (by pressing Alt+click) until the desired color is set.
<b>Outliers</b>	
<b>Negative /Positive Outlier Threshold</b>	This is the value up to which everything in the chart automatically scales (if automatic scaling is selected). If one of the values in the data exceeds this value, then this value is ignored for maximum calculation. All values above the maximum value are represented as outliers accordingly.
<b>Negative/Positive Outlier Threshold Percent</b>	Same feature as <i>Negative/Positive Outliert Threshold</i> , but for percent values in deviation charts.
<b>Outlier Size</b>	The dimension of the outlier sign in pixels.
<b>Use Outlier Threshold</b>	Determines whether the outlier threshold should be used (only in scale mode auto).
<b>Offsetbar Chart</b>	
<b>Offsetbar Offset on Left</b>	Show the deviation bar of the offset bar chart on the left, not on the right.
<b>Offsetbar Deviation Labels On Top</b>	Always show the labels of deviations in offset bar charts at the top. Otherwise, negative deviation labels will be shown within the bar.

Offsetbar Labels on Top	Show the labels of the offset bars above the bar and not within.
<b>Scaling Helper</b>	
Scaling Helper Bar Line Width	Specifies the thickness of the Scaling Helpers (see Helper Tab) when the type of the Scaling Helper is Line.
<b>Stacked Bar Chart</b>	
Stacked Bar Sums Visible	Should be sums shown above the stacked bars?
Stacked Bar Negative Values	<b>Deprecated</b> , replaced by <i>Stacked Bar Mode</i>
Stacked Bar Mode	Controls the mode of the stacked bar chart. There are the following modes: <i>Regular</i> : The sums are made up from absolute values; negative values are added as positive. <i>Negative</i> : Negative values are treated as such and are represented as a separate negative stack. <i>Real Values</i> : The sums are made up from real numbers (not absolute ones), but only positive stacks are made up. <i>Percent</i> : The stack segments are displayed as percentage parts from the stack sum.
Stacked Bar Label Position	Determines where labels should be shown in a stacked bar chart: within or on the right side.
<b>Display</b>	
Chart Type by Series	A JSON-Array, which contains the chart types by series. If a chart type is not defined for a series (NULL), the property <i>Chart Type</i> is used.
Bar Width	Thickness of the elements in stacked bar, waterfall and integrated deviation charts.
Ending Line Thickness	Thickness of Ending-Lines.
Ending Line Color	Color of KPI-Ending-Lines.
Ending Line Visible	Should be Ending-Lines shown?



<b>Ending Line Overlap</b>	Right and left overlapping of the KPI-Ending-Lines above the bar.
<b>Line Dot Radius X</b>	Specify the X- and Y-radius of the pin and line chart. The distinction into X and Y allows to create ellipses and suchlike.
<b>Line Dot Radius Y</b>	
<b>Pin Head Radius X</b>	
<b>Pin Head Radius Y</b>	
<b>Pin Head Mode</b>	front or <i>back</i> ; whether the pin head is drawn in front or behind the pin line.
<b>Pin Width</b>	Thickness of pin lines used within pin charts. With a Pin Width = "0" it is possible to realize a dot chart.
<b>Space Factor Deviation Chart</b>	Space occupied by a deviation chart. Formula for calculating the space: Factor / (Sum of all factors)
<b>Space Factor Base Chart</b>	Space occupied by the Base Chart. Formula for calculation of space: Factor / (Sum of all factors)
<b>Pin Head Color</b>	The head color of the percentage deviation pins. Does not apply to base chart.
<b>Show Pin Head Color</b>	Whether the selected "Pin Head Color" should be applied or not. Otherwise the deviation color (red/green per default) will be used
<b>Threshold Lines Config</b>	A JSON, which contains the configuration of the threshold lines
<b>Events</b>	
<b>On Element Clicked</b>	Event triggered by clicking on an element of the chart.
<b>On New Data Arrival</b>	Event triggered on arrival of new data.

## Interactivity at runtime

The *graphomate charts* extension supports some features that can be used interactively at runtime. Many (but not all) of these functions can be configured on the *Additional Property Sheet*.

### *Excel-Export*

If the option *Excel Export Available* in the *Behavior tab* is activated, at runtime on mouse-over an Excel export icon is displayed next to the chart, which enables you to export the chart as a JSON file. So the chart can be copied also to MS Excel (as long as our add-in *graphomate charts for Excel* is installed).

### *Context Menu*

If the option *Context Menu* in the corresponding tab is activated, the *Context Menu* will be accessible during runtime by right clicking on the component. It allows special filtering (according to the settings made). A reload resets all changes made with the context menu.

### *PNG Export*

If the option *PNG Export Available* in the *Behavior tab* is activated, at runtime on mouse-over a camera icon is displayed next to the chart, which enables you to export the chart as a PNG file. So the chart can be copied as a PNG also to MS office applications.

### *Tooltips*

If the option *Tooltips* is activated in the *Helper Tab*, *Tooltips* are displayed on the chart at runtime, showing the detailed information for that item.

### *User Highlights*

Furthermore there is the possibility of creating so-called *User Highlights* at runtime and to store those with bookmarks (see *The scripting language of Design Studio*). Simply click on the desired value in the dashboard while pressing the *Alt*-key to set the *User Highlights*.

## 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	'0.00'	-,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.

## Known Issues

- *Data Series Width* in the *Data Series Style Editor* is, at the moment, only possible for bar/column charts. Please use the parameter *Bar Width* in the properties for waterfall, stacked and offset bar charts. Also the *Width* of the *Data Types* cannot be used for waterfall and stacked bar charts.
- *Series Labels* Right/Bottom of the waterfall and the stacked bar chart are not always drawn correctly.
- Scaling a waterfall chart manually with a positive minimum results in all elements being rendered into the bars.
- In some cases, the Design-Studio pdf export doesn't work in Internet Explorer and MS Edge if hatched or dotted datatypes are used.
- Tooltips are not shown for NULL value labels in Internet Explorer
- Guideline to umlauts, special characters and blank spaces  
In general umlauts, special characters and blank spaces Umlauts are percent encoded for technical reasons in the Advanced Property Sheet (see: <http://en.wikipedia.org/wiki/Percent-encoding>).

Example:

*Nestlé - Development of sales in % compared to the previous year*

becomes:

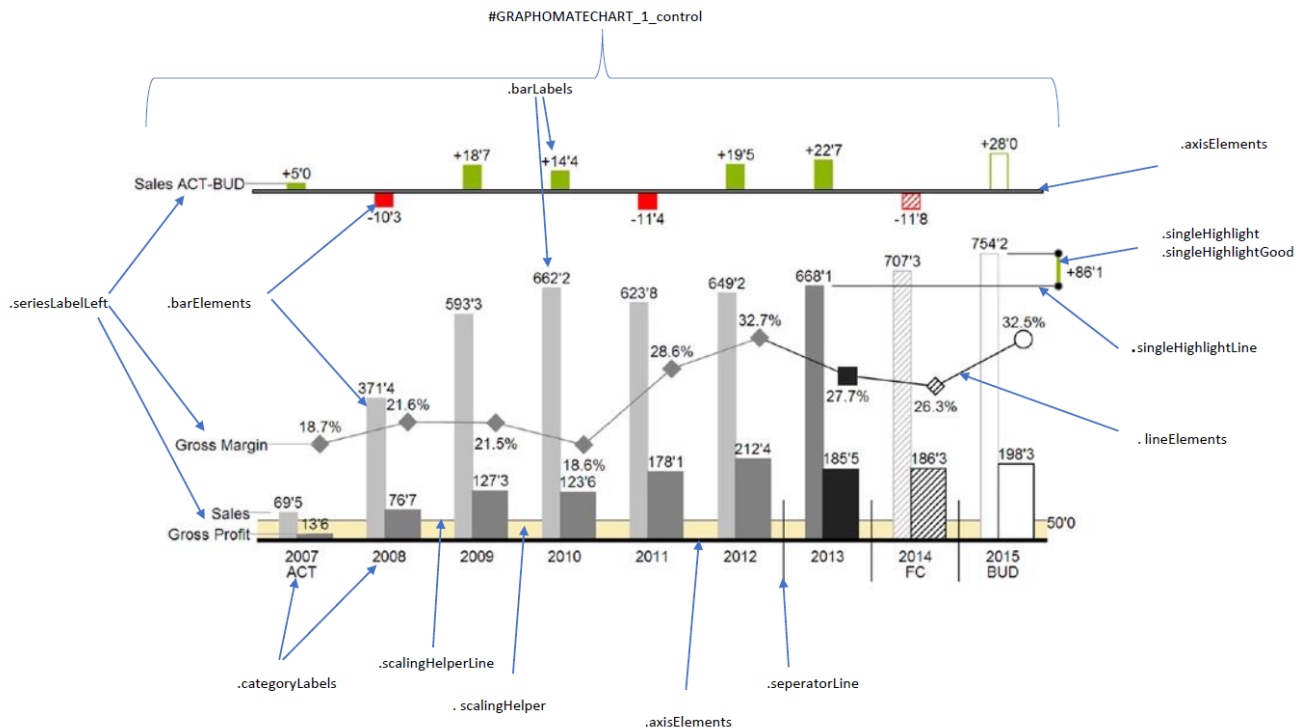
*Nestl%C3%A9%20Development%20of%20sales%20in%20%25%20compared%20to%20the%20previous%20year*

This makes it necessary to percent encode string values even while transferring them from the scripting language or Standard PropertySheet. (On the Internet there are many free tools for en-/decoding, for example: <http://www.url-encode-decode.com/>.)

# CSS Selectors

## Overview of css classes

The following illustrations provides some of the css selectors, which can be addressed by using the *Costum CSS* i n SAP BusinessObjects Design Studio.

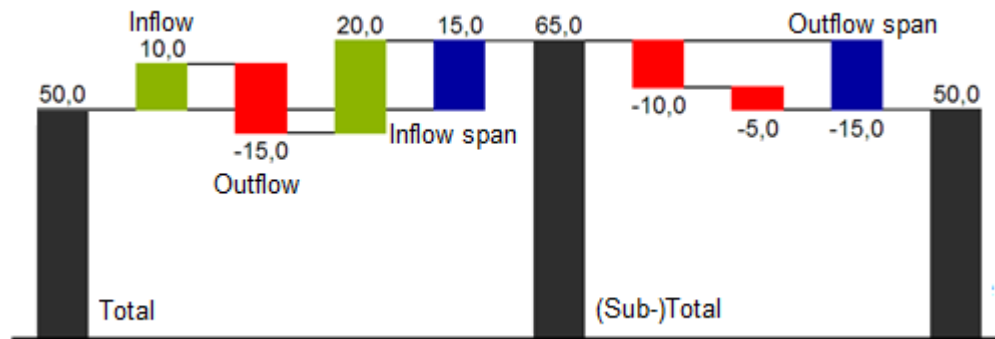


The chart elements contain the hierarchy level as a CSS class, when provided by the query. Furthermore we recommend using a browser console to inspect the elements for their CSS classes.

## Appendix

### Waterfall Calculation Path

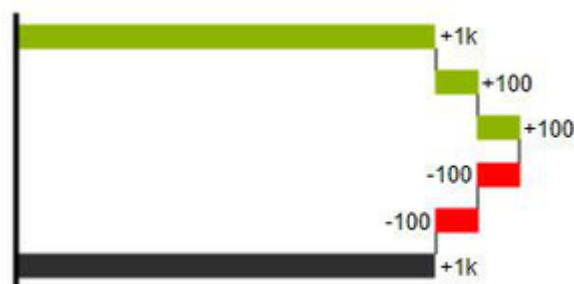
A waterfall chart – often also called a flying bricks chart – shows how an initial value is increased (inflow) or decreased (outflow) by a series of values, which lead to a final value – if necessary with subtotals and spans.



For a flexible use of the waterfall in *graphomate charts* an additional *Data Series* has to be defined: the *Waterfall Calculation Path*. This *Data Series* determines, whether the value to be shown is an in- or an outflow value, a (sub-)total or a span. In general, the sign of the data series value determines the effect on the (sub-) totals of the waterfall. Negative values are interpreted as outflow values, positive values are interpreted as inflow values and colored according to the color scheme on the *Appearance* tab.

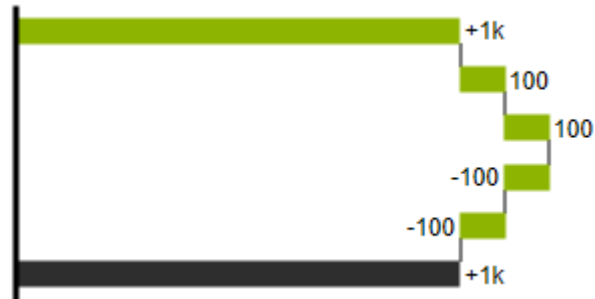
In case of using *Data Types* the colors of the *Data Types* overwrite the color scheme of the *Appearance* tab.

By default, the last element of a waterfall is interpreted as the sum total. A waterfall without entries in the *Waterfall Calculation Path* would therefore look like this. By defining the *Waterfall Calculation Path* the appearance and the sign of each waterfall element can be controlled independently - even via scripting language. The following options can be used:

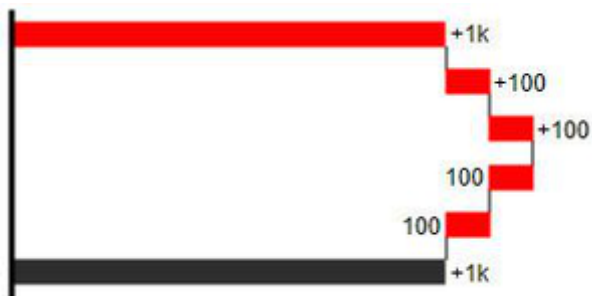


**+ = inflow**

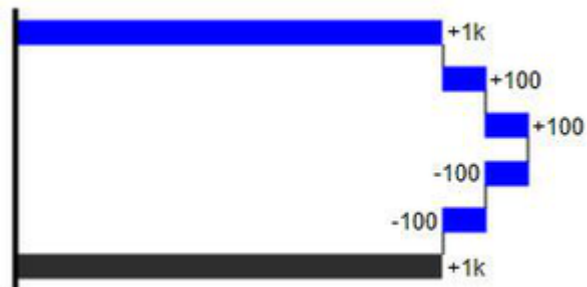
Positive signs are suppressed, the +-color is applied to the elements.

**- = outflow**

Negative signs are suppressed, the --color is applied to the elements.

**0 = neutral position**

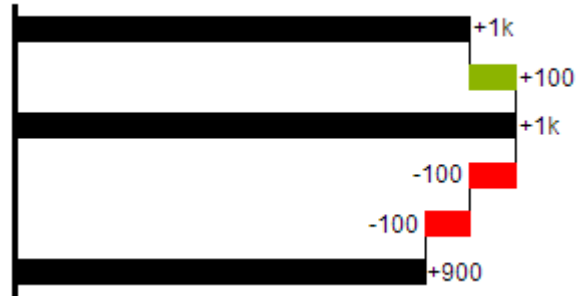
All signs are shown, the (0)-color is applied to the elements.





**==(Sub-)total**

The element starts at the value axis and the (=)-color is applied to those elements.



**s-=outflow span**

With the help of a span single changes can be summarized starting from a (sub-)total.

With an outflow span single cost items can be aggregated to a total cost.

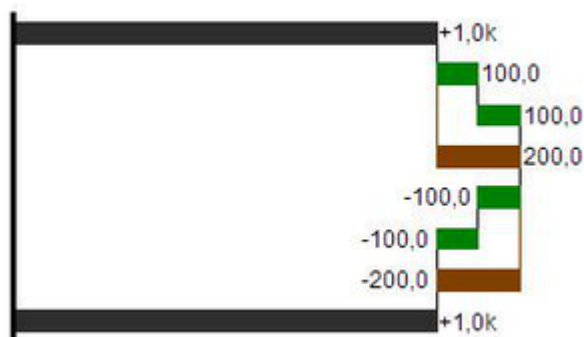
Corresponding to outflow elements (see above) negative signs are suppressed and the (s-)-color is applied to the elements.



**s+=inflow span**

With an inflow span single inflow items can be aggregated starting from a (sub-)total.

Corresponding to inflow elements (see above) positive signs are suppressed and the (s+)-color is applied to the elements.



The (-) and (s-)values in the Waterfall Calculation Path also have an effect on the corresponding deviation charts: For negative values, which are now shown without signs based on the (-) and (s)-entries, the sign and the orientation of the deviation is reversed by necessity. Otherwise there is a risk of misinterpretation.

