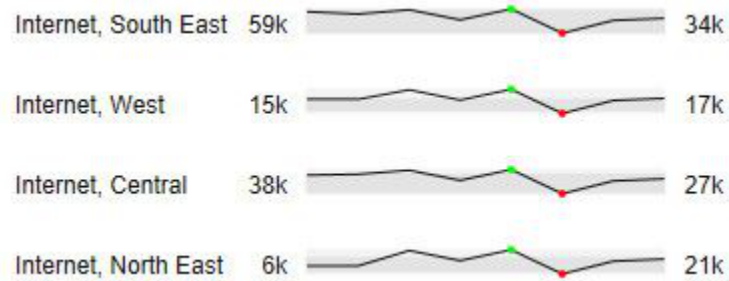


## User Manual for the graphomate sparklines 1.1 for SAP BusinessObjects Design Studio



Version 1.1 – as of July 2016

<https://www.graphomate.com>

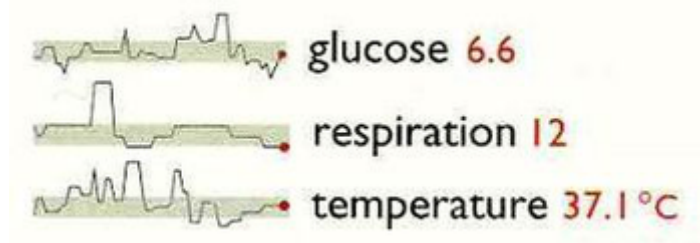


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## Introduction

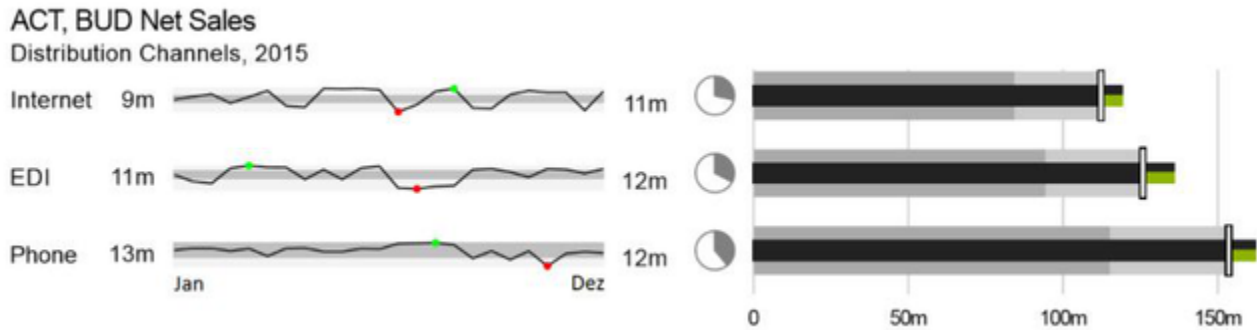
Sparklines are a visualization concept by Edward Tufte, which he initially presented in 2006 in his book "*Beautiful Evidence*".



He uses the medical use case seen to the left to describe how a strongly condensed time representation can add information and thus context to an analysis which simplifies the medical classification.

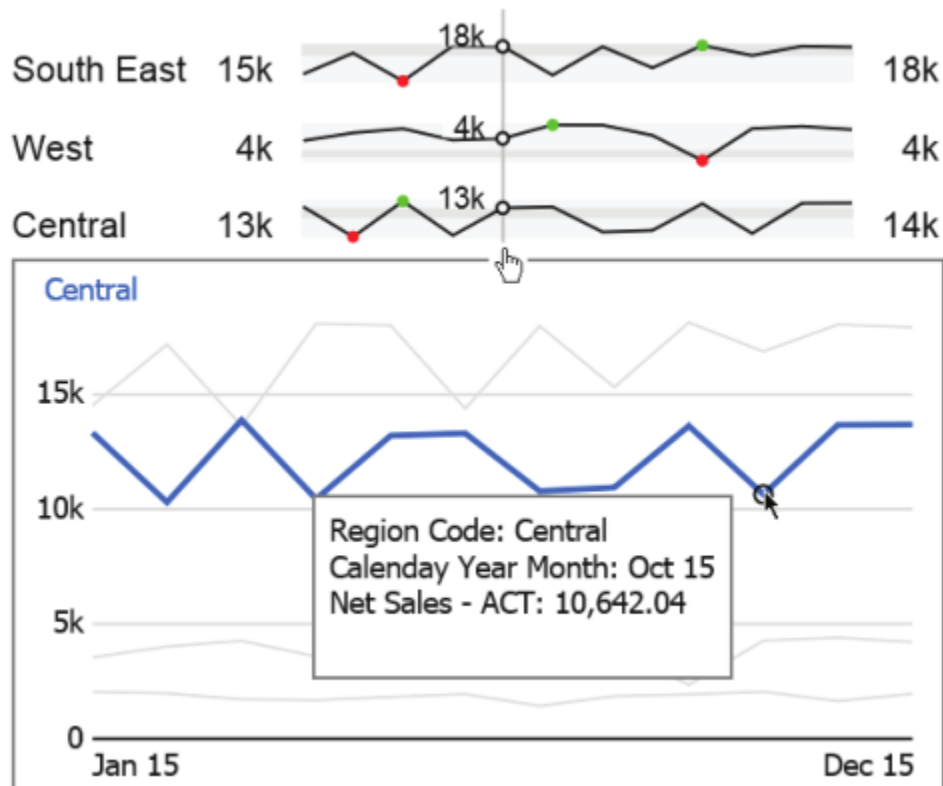
Edward Tufte defines sparklines as „datawords: data-intense, design simple, word-sized graphics.“ (Source: Edward Tufte, *Beautiful Evidence*, p.47)

The idea quickly spread to business reporting applications where data over time needs to be displayed. Especially in combination with bullet graphs, sparklines are a valuable addition to dashboard applications.



As we have implemented the full bullet graph concept by Stephen Few in our *graphomate bullet graphs*, supplemented by a few additions to integrate the International Business Communication Standards (IBCS), it immediately suggested itself to offer a sparkline component for SAP BusinessObjects Design Studio as well. The *graphomate sparklines* component offers features to further enhance the perception:

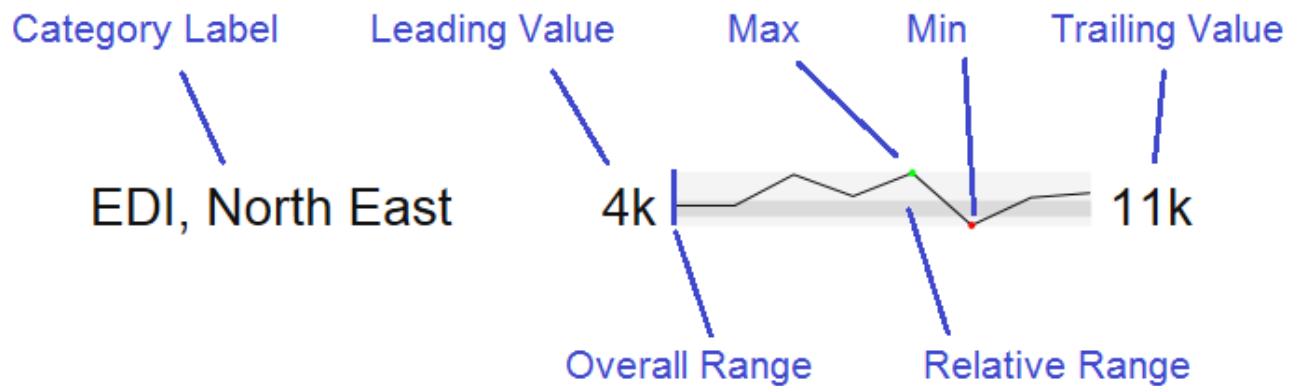
- first and last value as well as maximum and minimum of each data series can be highlighted,
- specific values are displayed along a vertical line, the so-called "ruler",
- gray areas in the background - *Overall Range* - indicate the location of a sparkline with the overall context,
- a click on a sparkline will open a popup that shows all sparklines as line charts. In the popup, they are scaled identically and are thus inherently comparable.



For our *graphomate sparklines* extension Design Studio 1.6 SP00 or higher 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.

## Description of Sparkline Elements

The elements of a single sparkline are broken down in the following:



The *Category Label* is generated from the data dimensions.

*Leading Value* is the first value in the data of a single sparkline.

*Trailing Value* is the last value in the data of a single sparkline.

*Max / Min* represent the largest respectively smallest value in the data of a single sparkline; visualized by a small colored dot (by default and green or red).

The *Overall Range* depicts the overall extent of all values from the resultset; the *Relative Range* marks the range of an individual sparkline within the *Overall Range*.

Example: the resultset contains two records. The maximum of the first records amounts to 100, the minimum to 75; the values of record 2 range between 0 and 50. In this case, the *Overall Range* for the component is 0-100. The *Relative Range* for record 1 is displayed in the upper quarter of the *Overall Range*, while the *Relative Range* for record 2 is displayed in the lower half.

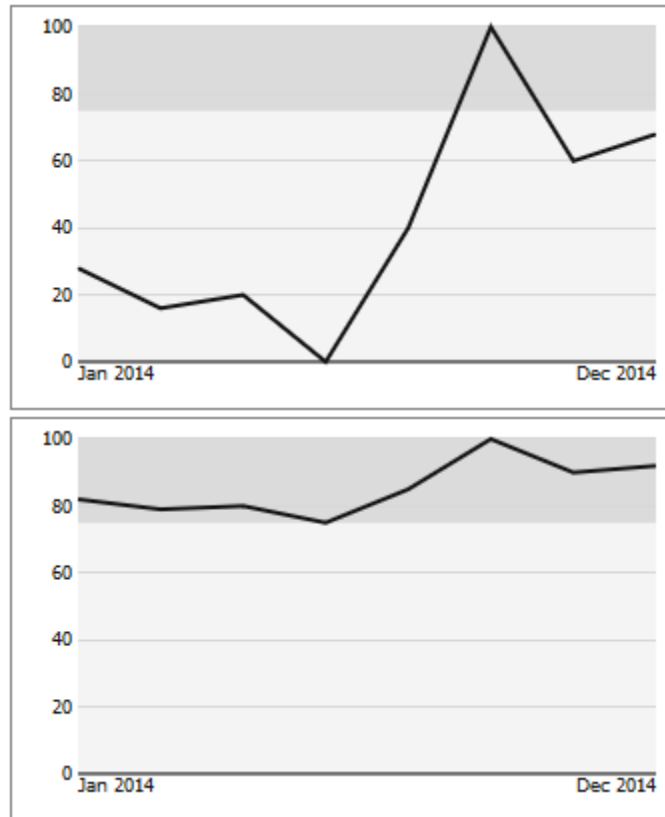


With this, it is possible to estimate the relevancy of a sparkline within the overall data set with a single glance; the higher the *Relative Range* is positioned within the *Overall Range*, the higher are the underlying values. Furthermore, it becomes evident quite quickly how diverse the values are – a wide bar represents a broad distribution, whereas in a narrower bar, values deviate far less.

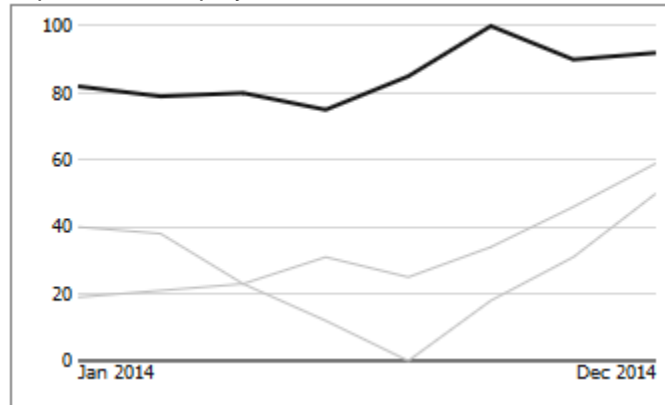
This is supported by an animated zoom: if the appropriate options are activated, a click on a sparkline will open an animated zoom popup.

The animation is divided into three steps:

1. In the first step, the clicked sparkline including *Relative Range* and *Overall Range* is enlarged to completely fill the zoom window.
2. In the second step, the sparkline itself is narrowed into the *Relative Range*, so that it is now scaled absolutely.



3. In a third step, *Overall Range* and *Relative Range* are faded out, and all other series from the dataset are faded in, so that the clicked sparkline can now be viewed in an absolute context together with all other other data series. The clicked sparkline is displayed in a different color than the others to ensure discriminability.



When hovering over a line with the mouse, it is highlighted in color; furthermore, a tooltip containing additional information is displayed.

## Installation

### Local installation of the extension to Design Studio

You have installed Design Studio 1.6 SP00+ on your computer.

1. Save the zipfile *graphomate\_sparklines1.1.x.zip* to a folder of your choice.
2. In Design Studio, choose *Tools Install Extension to Design Studio*, 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 Design Studio.
7. After the restart, the graphomate extension appears in the Component View of Design Studio.

### Removing the extension from Design Studio

In Design Studio choose *Help > About...*

1. Click the *Installation Details* button.
2. Select the component *graphomate sparklines 1.1.x*
3. Choose *Uninstall...*
4. In the UninstallWizard choose *Finish*.
5. Choose *Yes* to allow Design Studio to restart.



### Server installation of the extension

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

1. Choose in the BI Platform Mode *Tools > Platform Extensions*.
2. Select the extension *graphomate sparklines* 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 Design Studio.
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 sparklines*.
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 Design Studio.
6. The *graphomate* sparklines 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

Place a *graphomate sparklines* extension onto the canvas and assign a data source via drag and drop. By default, *graphomate sparklines* use the complete resultset; no further data assignment is necessary. It is however possible to restrict the resultset to a smaller data selection.

Further options in the *Additional Properties Sheet* can be used to further alter the appearance of the *graphomate sparklines*.

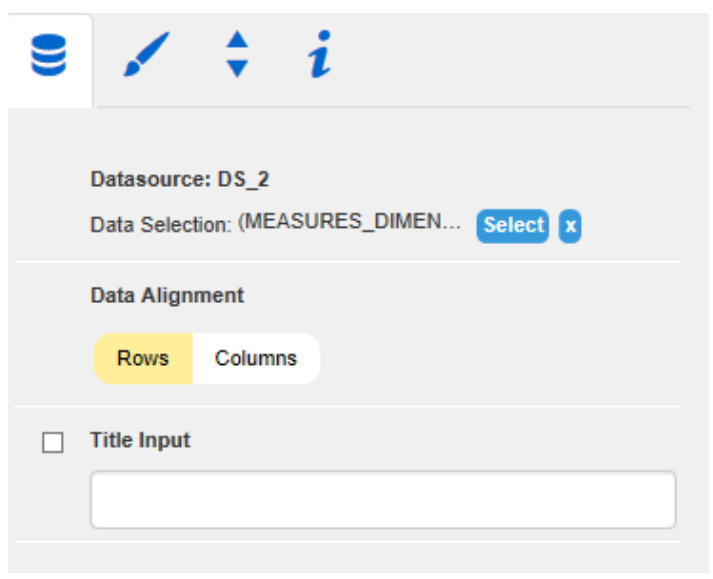
## Properties

Basically, there are two possibilities to maintain the features of *graphomate sparklines*: 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.

The *Checkboxes*  next to the features in the *Additional Properties Sheet* are used to control the visibility of 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 (Reload Application) 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.

<h3>Data Tab</h3>	
<p>The Data Tab shows the selected data source; by default, the complete resultset is used to generate sparklines. With the „Select“ button, the result set can be narrowed down to a more limited selection.</p> <p><b>Data Alignment</b></p> <p>The interpretation of the result set as rows or columns can be determined here.</p> <p><b>Title Input</b></p> <p>Here, a title for the component is entered. If the checkbox is activated, this is displayed. Line breaks will be applied; it is also possible to format the title with HTML and (inline) CSS.</p>	 <p>The screenshot shows the Data Tab interface with the following elements:</p> <ul style="list-style-type: none"> <li>Icons for data source, edit, alignment, and information.</li> <li>Datasource: DS_2</li> <li>Data Selection: (MEASURES_DIMEN... with a "Select" button and a close "x" icon.</li> <li>Data Alignment section with "Rows" (selected) and "Columns" buttons.</li> <li>Title Input section with a checkbox and an empty text input field.</li> </ul>
<h3>Appearance Tab</h3>	

### Text Formatting

In this section, font sizes and font family of texts are determined.

### Height of Charts Elements

The option *Padding between sparklines* governs the space between individual sparklines. The height of the sparklines is determined by the font size.

### Value Format

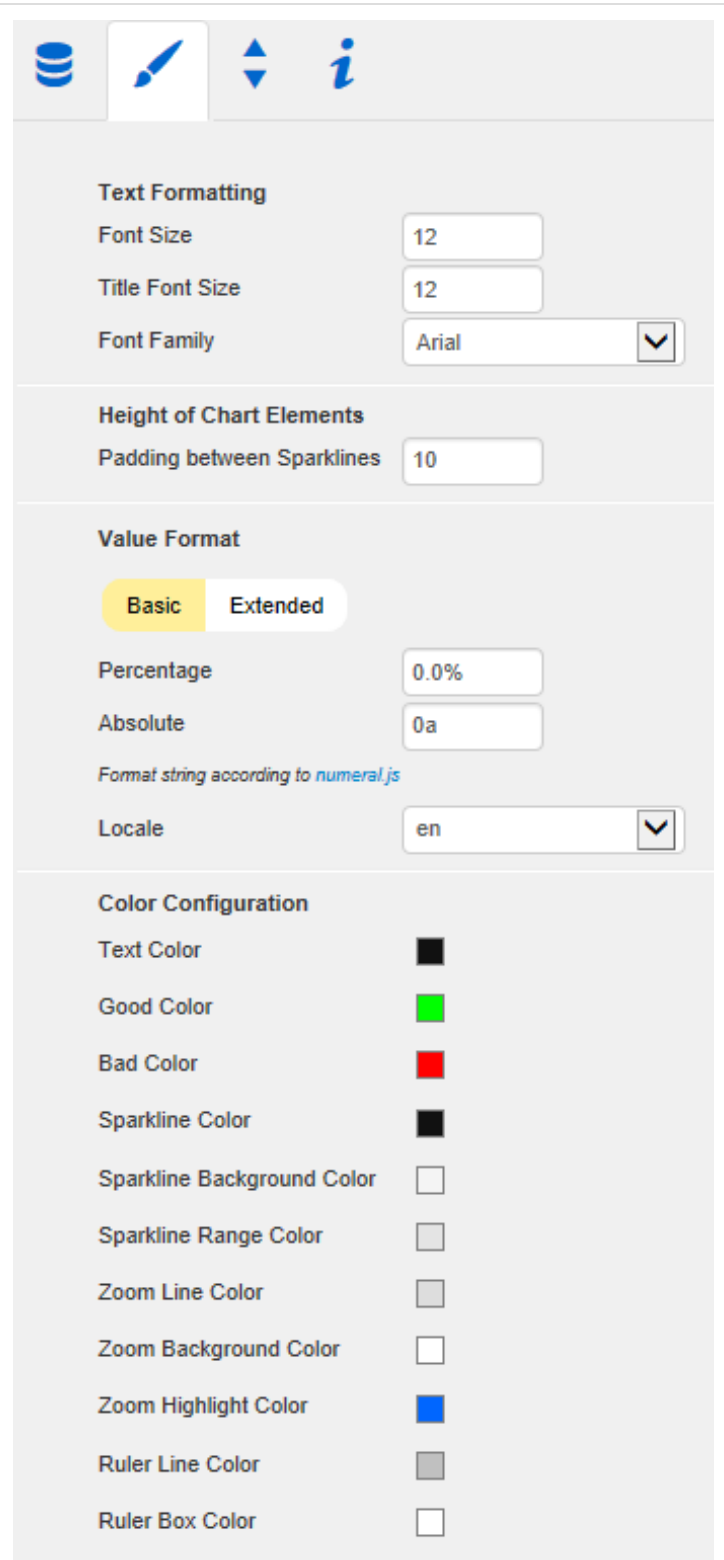
Select the format of the *Category Labels*:

- *Basic*  
Select the format of the absolute and percentage values according to guidelines of *numeral.js* – see Appendix page 13. *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*.
- *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.

### Color Configuration

In this section, the colors to be used by the sparkline extension are determined.



The configuration interface includes the following settings:

- Text Formatting:**
  - Font Size: 12
  - Title Font Size: 12
  - Font Family: Arial
- Height of Chart Elements:**
  - Padding between Sparklines: 10
- Value Format:**
  - Mode: Basic (selected), Extended
  - Percentage: 0.0%
  - Absolute: 0a
  - Format string according to numeral.js
  - Locale: en
- Color Configuration:**
  - Text Color: Black
  - Good Color: Green
  - Bad Color: Red
  - Sparkline Color: Black
  - Sparkline Background Color: White
  - Sparkline Range Color: Light Gray
  - Zoom Line Color: Light Gray
  - Zoom Background Color: White
  - Zoom Highlight Color: Blue
  - Ruler Line Color: Gray
  - Ruler Box Color: White

## Behavior Tab

### Display Elements

This section comprises all options concerning the visibility of sparkline elements.

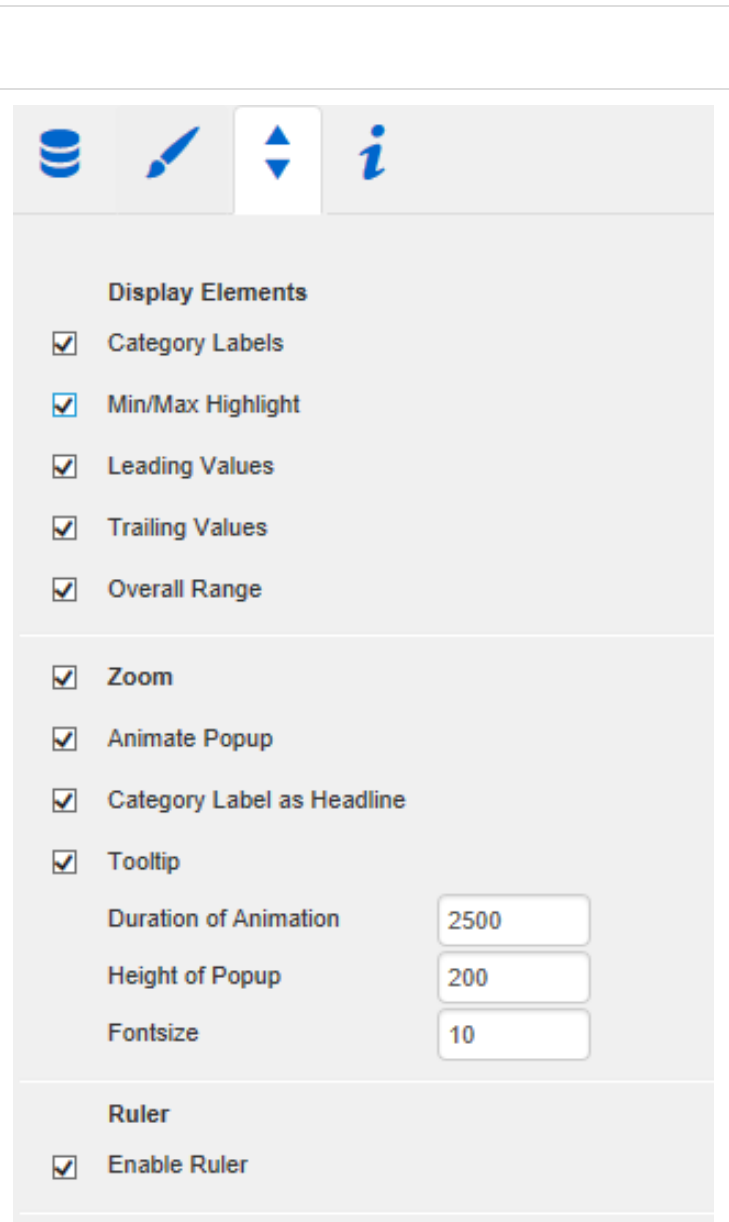
- *Category Labels* governs the display of category labels.
- *Min/Max Highlight*: If this option is checked, the maximum and minimum of individual sparklines is marked with a little colored dot (by default green and red; to be determined on the *Appearance* tab).
- *Leading Values* displays the first value of the data series for a sparkline in front of the sparkline.
- *Trailing Values* displays the last value of the data series for a sparkline after the sparkline.
- *Overall Range*: If this option is activated, the position of the sparkline within the whole result set is displayed as a grey bar; please refer to Description on Sparkline Elements.

### Zoom

Ist diese *Checkbox* aktiviert, öffnet sich bei Klick auf eine Sparkline ein Zoom-Popup.

- *Animate Popup* allows to switch to an animated zoom popup (please refer to Description on Sparkline Elements).
- *Category Label as Headline*: If activated, the category label shown in front of the clicked sparkline is used as headline of the zoom window. If the mouse cursor hovers over a sparkline in the zoom, the text is replaced with the category label of the line hovered over. This is reset as soon as the mouse moves away from the line.
- *Tooltip* activates a tooltip with additional data on mouse hovering over a line in the zoom window.
- *Duration of Animation*: Here you can specify the duration of the zoom animation in milliseconds
- *Height of Popup* determines the height of the zoom popup. The height of the zoom can never be larger than the height of the sparkline component. The zoom width is governed by the component width.
- *Fontsize*: This options governs the font size within the zoom popup.

### Ruler



The screenshot shows the configuration interface for the Behavior Tab. At the top, there are four icons: a database symbol, a pencil, a double-headed vertical arrow, and an information symbol. Below these icons, the settings are organized into sections:

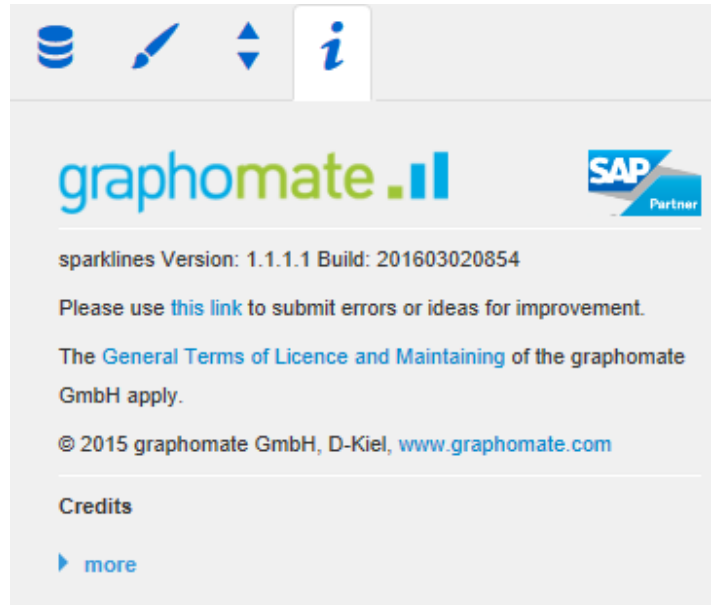
- Display Elements**: A list of five checked checkboxes:
  - Category Labels
  - Min/Max Highlight
  - Leading Values
  - Trailing Values
  - Overall Range
- Zoom**: A list of four checked checkboxes:
  - Zoom
  - Animate Popup
  - Category Label as Headline
  - Tooltip
 Below these are three input fields:
  - Duration of Animation: 2500
  - Height of Popup: 200
  - Fontsize: 10
- Ruler**: A single checked checkbox:
  - Enable Ruler

*Enable Ruler* activates a vertical line over all visible sparklines, which is displayed when the mouse pointer hovers over the component. Currently, this option is not supported on mobile devices.

### Info Tab

Here you can find the version number of our *graphomate sparklines* 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 navigation bar with four icons: a home icon, an edit icon, an expand icon, and an information icon. Below the navigation bar, the 'graphomate .ll' logo is displayed on the left, and the 'SAP Partner' logo is on the right. The main content area contains the following text:

sparklines Version: 1.1.1.1 Build: 201603020854

Please use [this link](#) to submit errors or ideas for improvement.

The [General Terms of Licence and Maintaining](#) of the graphomate GmbH apply.

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**Credits**

[▶ more](#)

## Known Issues

### 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 Additional 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%20%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-en-code-decode.com/>.)

## 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.

