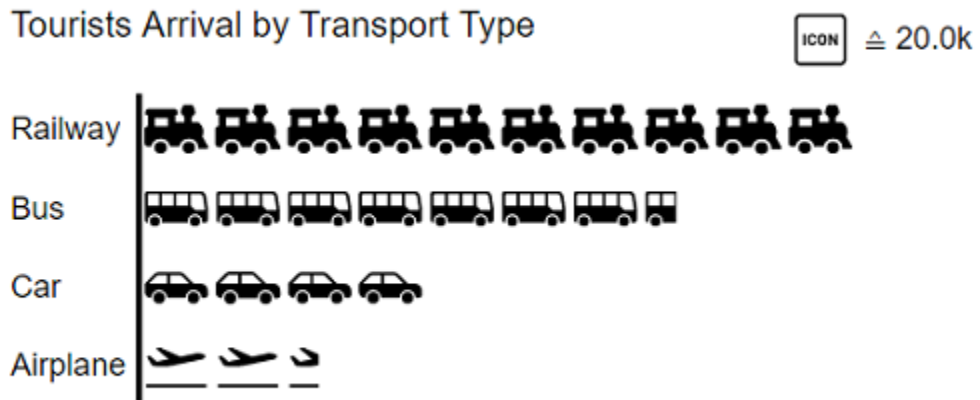


# User Manual for the graphomate pictograms for SAP Analytics Cloud



Version 2022.3 – as of August 2022

<https://www.graphomate.com>

## Table of contents

- [Introduction](#)
- [Installation](#)
- [Hosting on premise of graphomate widgets](#)
- [Quick Start / Data Binding for the graphomate pictograms](#)
- [graphomate property sheet \(GPS\)](#)
- [Known Issues \(pictograms\)](#)
- [Known Issues \(SAC\)](#)

## Introduction

Pictograms can be used to present "complex" facts quickly and understandably. Our pictograms therefore enrich your diagrams and dashboards with additional semantic elements. In the case of product groups, for example, the viewer can immediately recognize which products are involved. The quantification of important key figures in the form of pictograms also facilitates the comparison between different product groups.

Germany  
Top 5 cities  
registration of passenger cars and electric cars  
2020



When dealing with pictograms, it's very likely to get to know the concept of Isotype. Otto Neurath and his team investigated in Austria from the 1920s onwards how they could make social and economic facts accessible to the working population with simple pictograms, often accompanied by a lower level of education.

The so-called isotype developed from the *Wiener Methode der Bildstatistik*. This acronym is composed of International **S**ystem of **T**ypographic **P**icture **E**ducation. This was the first time that facts were conveyed in a more comprehensible, neutral and uniform way. The system includes a defined set of pictograms as well as a grammar. It determines the way the pictograms are combined.

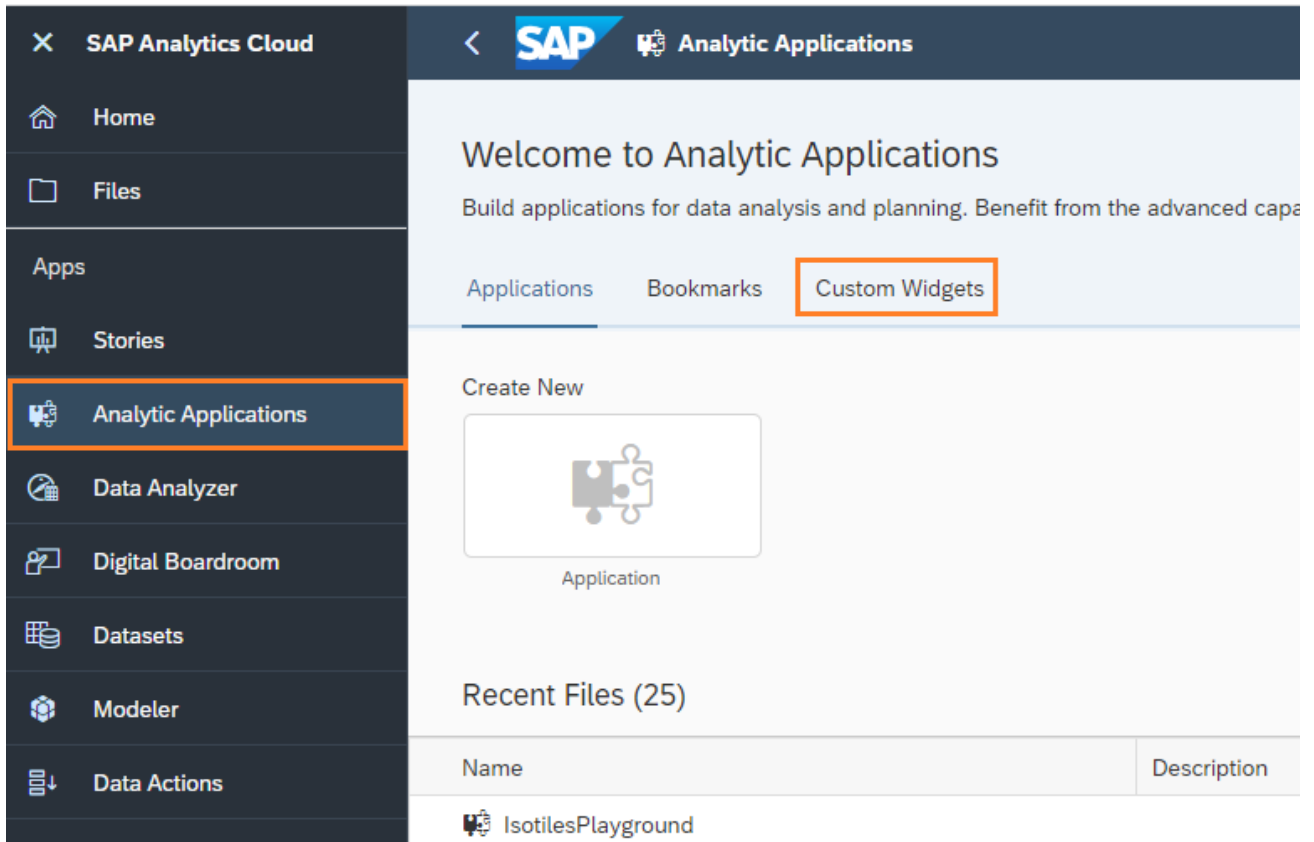
In the following we describe the properties of the graphomate pictograms and the possibility to configure them in our user interface. This user interface is almost identical in all BI front ends - Power BI, Tableau, SAP Analytics Cloud and Lumira Designer. Formatting settings of graphomate pictograms can be stored on the graphomate server and used in other environments.

## Installation

In the SAP Analytics Cloud the graphomate extensions are installed as so-called 'Custom Widget'. Please note, you must have administrator rights for the installation.

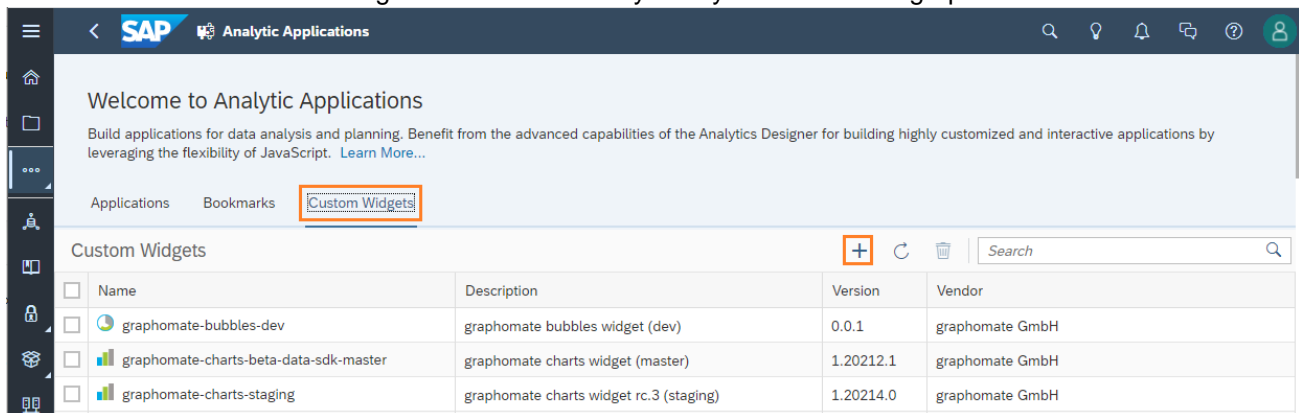
### 1. Step

Navigate to the sidebar and select the "Analytic Applications" entry



### 2. Step

Now switch to the "Custom Widgets" tab. Via the '+'-symbol you can add the graphomate JSON



The graphomate extensions can now be used as 'custom widget' in the Application Designer.

## Hosting on premise of graphomate widgets

SAP provides for custom widgets in the SAC to be provided by a web server. For the graphomate suite, graphomate normally takes over this task. However, it is also possible to host the components on premise. This requires a suitable web server.

### Requirements to the web server

- Accessible by all clients that should be able to display reports with graphomate components.
- Https encrypted with valid certificate
- Working [CORS](#) for the domain(s) of you SAC. I.e. setting the `Access-Control-Allow-Origin` http header either to the domain of your SAC or to `*`.

### Setup of the hosting

1. Download of the on premise version from the [graphomate release desk](#)
2. Unzip the zip to an accessible folder on the web server
3. extract `graphomate_${component}_${version}_SAC.json` from the folder and adjust where it says <<put your servers address here>> so that the URLs point to the web server
4. Upload the JSON file to the custom widget list of the SAC in the Analytic Applications section. (see Installation)

### Updates

Since the JSON file contains a checksum, it is not sufficient to exchange these files on the server. This will cause the custom widget to fail to load. To avoid problems with caching from the beginning, we recommend to store the extension versioned by a folder structure, because this way never 2 files with different checksums can be accessed under the same URL. An upgrade or downgrade can then be realized by uploading the corresponding JSON file in the SAC.

## Quick Start / Data Binding for the graphomate pictograms

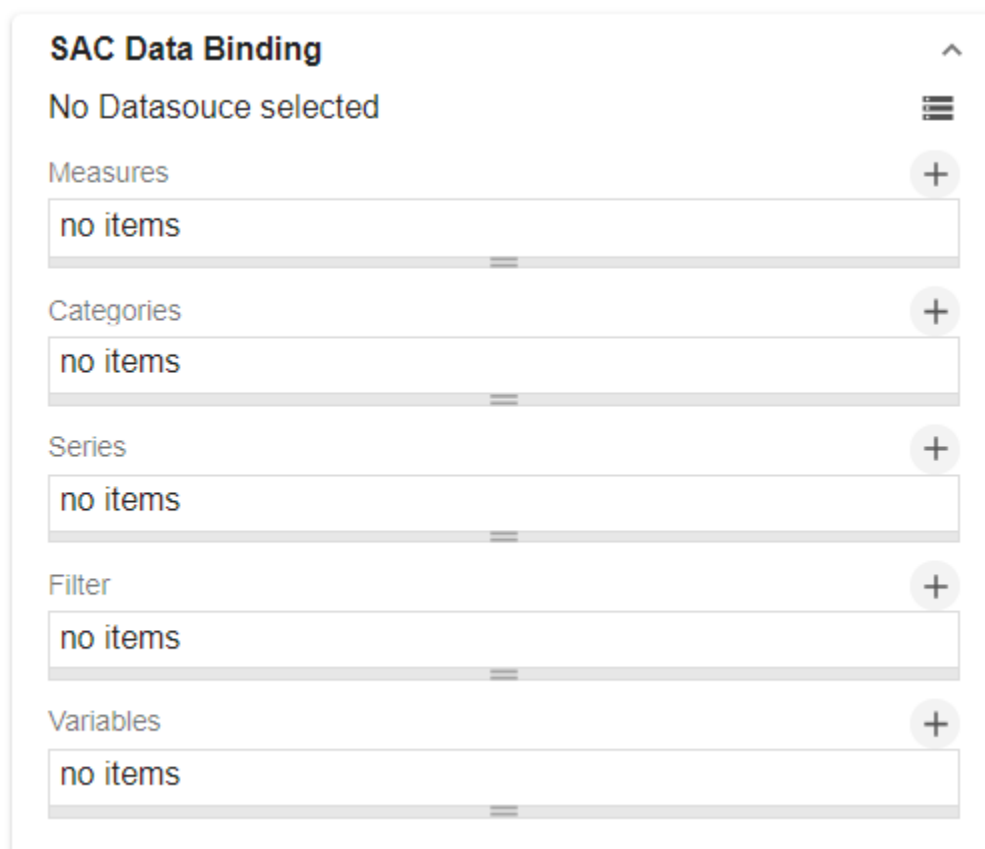
Using a graphomate extensions in an Analytic Application and workaround for data connection

**i** With the QRC3.2022 release of SAC, SAP delivers its partner interface (SDK) with the possibility to connect data directly now.

Data feeds can now be assigned directly. The previous scripting workaround is no longer necessary, but can of course still be used.

However, we recommend using the direct data binding and adapt existing applications accordingly.

In particular, please do not forget to comment out the line of code that was previously used to supply our custom widget with data.



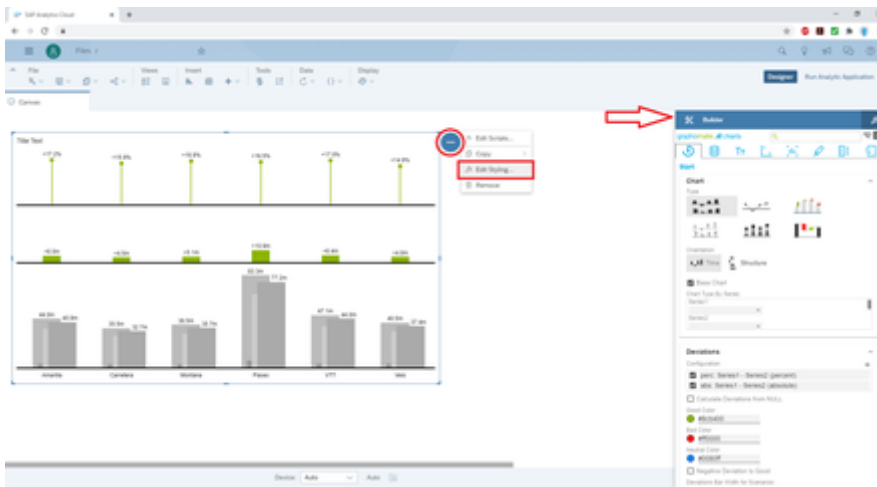
You will find the new Data Binding Menu under the first tab "Data".

After a DataSource has been assigned, you can select measures, axes, series, filters and variables for the graphomate components.

For more details see the description of the tab "Data" in this manual.

Open the graphomate property sheet (GPS)






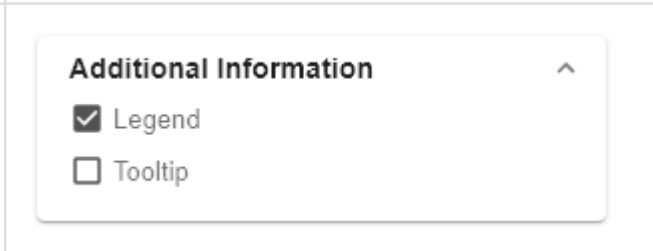
Settings for the components are set via the graphomate property sheet. Select the graphomate extension and go to the 3 dots next to the component. Then select "Edit Styling". The Builder Panel (red arrow) with the GPS should appear. Now configure the settings on the graphomate matrix as desired.



## graphomate property sheet (GPS)

- [Data Tab](#)
- [Start Tab](#)
- [Labels Tab](#)
- [Axes Tab](#)
- [Input Output Tab](#)

The following usage structure can be found in all graphomate extensions with the graphomate property sheet (GPS):

<p><b>Search field</b></p> <p>Use the search field to quickly find a setting (example "Title") and change it.</p> <p><b>Connection to the graphomate server</b></p> <p> active connection to graphomate server</p> <p> no active connection to the graphomate server</p> <p><b>Info Tab</b></p> <p>In the header of the GPS there is an info symbol (  ). Click on the  icon to open a tab with relevant information:</p> <ul style="list-style-type: none"> <li>• the version number of the installed extension (important information for the support)</li> <li>• link to the graphomate Support Desk</li> <li>• to the general terms and conditions</li> <li>• to the graphomate website and</li> <li>• a list of the software libraries used (Credits)</li> </ul>	 <p>The screenshot shows the 'graphomate bubbles' interface. At the top, there is a search bar and a toolbar with icons for data, text, points, axes, and settings. The 'Input Output' tab is active, showing a 'Server' section with a URL field containing 'https://', a 'Save' button, and a red error icon. Below this is an 'Info' section displaying the version '2021.4.0', a link to 'Documentation', and the 'General Terms of Licence and Maintaining' of the graphomate GmbH. At the bottom of the Info section is a 'Credits' dropdown menu and a 'CLOSE' button.</p>
<p><b>Checkboxes</b></p> <p>An active property is indicated by a white check mark in the checkbox. To deactivate it, click on the checkbox again.</p>	 <p>The screenshot shows the 'Additional Information' section of the GPS. It contains two checkboxes: 'Legend' which is checked, and 'Tooltip' which is unchecked.</p>



**Color Picker**

You can enter the color value as HEX code or click on the colored circle.

Use the Color Picker or enter color values as HEX, RGB, or HSL code. You switch between these color models using the small arrows on the right side of the color picker.

**Deviations** ^

Good Color  
● #8CB400

Bad Color  
● #FF0000

Invert

**Good Color**

#8CB400

HEX

OK

**Adding new elements to lists**

Click on the + icon to create new elements in a list.

**Actions with elements of a list**

When hovering over an entry, different icons may appear and cause the following action:

↓ ↑ Moves the entry up or down in the list

📄 Creates a copy of the entry

🗑️ . Click on the icon to delete the selected entry.

**Scenario Definition** ^

+

- ✎ ■ AC
- ✎ ■ PP
- ✎ □ BU

Import / Export  
W3sic2hvcnQiOiJBQyIsIr

**Filter Option**

In some cases, it is necessary that several settings are only applied to certain key figures, dimensions or dimensional characteristics. You can use the filter option to define the combination to which the setting is to be applied.

In the example on the left, the desired setting is only applied to the key figure "budget". This can be, for example, a certain number formatting, a scenario or a certain icon for displaying the key figure.

Filter states can be defined in the following settings of graphomate extensions:

- graphomate matrix
  - Value Format
  - Calculations/Deviations
  - Scenario Assignment
  - Bar Chart Assignment
  - Pin Chart Assignment
  - Background Bar Assignment
- graphomate bubbles
  - Value Format
- graphomate pictograms
  - Pictograms/Icon Assignment



**Measures**

Dimension  
Measures

Members  
budget x

OK

**Copy Filter**

Filter settings on dimensions can be saved to the clipboard and reused in other graphomate extensions settings. Use the   symbols for this purpose.




**aggregation**

New Member Key  
Overall

New Member Name  
Overall

Target Dimension

Aggregation Type  
Sum



Filter   

no items

Description (optional)

OK

**Input mode: Field / comma separated list (csv)**

Properties with the  symbol allow the definition of settings on the graphomate property sheet in two variants. The mode can be changed by clicking on the  symbol. The following modes are available:

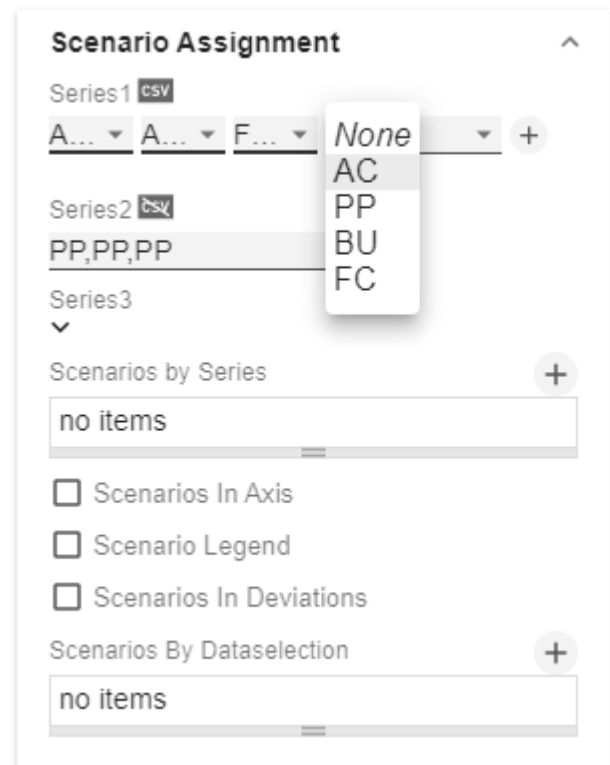
1. per field: The value is entered per field. After one field has been filled, another field is created automatically. For the Scenario Assignment (see picture) a list with all configured scenarios appears. By clicking on the scenario, the property for the element of the series is applied.
2. As a list: The entry is made as a comma-separated list.

Example: Application of the scenarios to elements of a series (see picture)

The first series contains two actual values (AC) and a forecast value (FC). The second series contains only values from the previous period (PP). You can enter the assignment of the scenarios as follows:

Variant per field for series 1: AC (field 1), AC (field 2), FC (field 3), AC (field 4, highlighted in the list)

Variant as list for series 2: PP,PP,PP,PP,




## Data Tab



Please note the search function in the gray highlighted line to quickly find properties.

### SAC Data Binding

Since the QRC3 release 2022 of SAC, data can be directly linked to our custom widgets. The first step is to assign a Data Model. To do this, click on the -icon on the right and select the data model you want to use.

### Measures

Determine which key figures should be displayed with the pictograms.

### Categories

Define here which dimensions should be used for filters and variables.

### Filter

Here you can define (background) filters for dimension values.



Search (e.g. title)



## Data

### SAC Data Binding

No Datasouce selected

Measures

no items

Categories

no items

Filter

no items

Variables

no items

*Variables*

At this point you pass values for variables.

## Start Tab

**Diagram***Orientation*

You can use the pictograms horizontally and vertically aligned:

- horizontally for developments over time (*Time*),
- vertical for structural comparisons (*Structure*).

*Dual Mode*

When Dual Mode is activated, the first two measures are displayed on the opposite axis.

**i** For short loading time of pictograms the number of category elements is limited to 100 and in *Dual Mode* to 50 elements.

*Legend Position*

Specify the position of the legend that represents the value per icon. Possible settings are Header (top right), Footer (bottom right) and None (no legend).

*Padding*

Sets a border around the pictogram. Select a CSS unit from the list (such as *10px*, *10em*).

**Pictogram***Icon Definitions*

Each entry represents an icon definition. This consists of the attributes *Source* and *Filter* as well as *Description*. Under *Source* you can select the source for an icon. In addition to preselected icons<sup>1)</sup>, you can provide your own icon under the *Custom* entry. This can be a valid URL or data URL. The most common image formats (.svg, .png, .jpeg and .gif) are supported. For performance reasons, the selected image files should not be too large (ideally only a few kilobytes), since they must either be loaded via external requests or, in the case of a data URL, included in the source code.

Under *Filter*, select the dimension and the associated members for which the icon is to be drawn. If you do not set a filter, the icon is applied to all data points, since there is no restriction. If there is an overlap between icon definitions regarding dimensions and members, the last created icon definition has priority.

**Start****Diagram**

## Orientation

Structure  Time

Dual Mode

## Legend Position

Header  Footer  None

## Padding

10 px

**Pictogram**

## Icon Assignment

## Scale Mode

Fix Icon Number  Full Width

## Max Icon Number

10

## Icon Spacing

0 px

The *Description* option allows you to define your own description for the icon definition, which then appears together with the selected icon in the list of created icon definitions. If no *Description* is set, the selected dimension members are displayed next to the icon (if there is no restriction, All is displayed).

1) It is recommended to use the structural mode for the pre-selected icons.

*Icon Definition Custom Icon URL*

If the option 'Custom' is set in the Icon Definition under Source, an additional text field appears with the title Custom Icon Url. There are two ways to provide your own icon:


1) **Img-URI:** Geben Sie eine externe URL an, unter der das Icon gespeichert ist.

**i** External Image-URL  
 Example: img url (svg bild by wikipedia commons)  
<https://upload.wikimedia.org/wikipedia/commons/8/89/Dog.svg>

2) **Data URL:** With the help of a Data URL external sources can be directly integrated into html. In order for the image to be used in the pictograms, the data-url must be specified in the following format: data:[<MIME-Type>;base64,<Data>

**i** Representation of a red dot:

```
"data:image/png;base64,
iVBORw0KGgoAAAANSUUhEUgAAAAoAAAAKCAAAAAC
NMs+9AAAABGdBTUEAALGP
C
/xhBQAAAAlwSF1zAAALEwAACxMBAJqcGAAAAAd0
SU1FB9YGARc5KB0XV+IA
AAAddeVYdENvbW11bnQAQ3JlYXRlZCB3aXRoIFR
oZSBHSU1Q72Q1bgAAAF1J
REFUGNO9zL0Ng1AAxPEfdLTs4BZM4DIO4C7OwQg
2JoQ9LE1exdlYvBBz7jq
ch9
//q1uH4TLzw4d6+ErXMMcXuHWxId3KOEtnXXV6
MJpcq2MLaI97CER3N0
vr4MkhoXe0rZigAAAABJRU5ErkJggg=="
```


 All

Source

Filter ↶ ↷ +

Description (optional)

OK

 Action movies

Source

Custom Icon URL

Filter ↶ ↷ +

Description (optional)

OK

genre

Dimension

Members

OK

The expression `data:` indicates that the URL is a data URL. The MIME type (in the example: `image/png`) defines the type of content ;`base64` specifies the encoding of the data. After a `,` (comma) follows the actual image as base-64 encoded string. Under the Google search 'data-url generator' you can find various online services that encode image files as base64 encoded strings and then provide them as data URLs.

**i** Tip: Microsoft 365 contains an extensive collection of categorized pictograms that can be saved locally as vector graphics (svg).

#### *Scale Mode*

Determines the scaling mode for the pictograms.

*Fix Icon Number*(Default): Space is reserved for `n` (given by the Property *Max Icon Number*) icons, regardless of whether `n` icons are actually needed to display the maximum value. This scaling mode is recommended if the values can change dynamically over several orders of magnitude (e.g. during filtering), since the size of the icons does not change.

*Full Width*: The space reserved for the icons depends on the number of icons needed to display the maximum value. The required number is always less than or equal to the value from the property *Max Icon Number*. This mode is more suitable for static representations and uses the full width for the representation of the icons.

Note: The size of the **square** icons is exclusively based on the given width in both the temporal and structural representation of the pictograms.

#### *Max Icon Number*

Determine the maximum number of icons per data point. This affects the value that the icon represents. The system tries to find a value for each icon that makes the most sense so that the actual maximum number of icons is less than or equal to the number you specify.

#### *Icon Spacing*

Defines the distance between two icons (within a data point). Select a CSS unit from the list (such as `px,em`).

#### **Tooltips**

If this check mark is ticked, tooltips will be displayed on the pictograms at runtime, providing detailed information for the corresponding element.



<p><b>Selection</b></p> <p><i>Fade Out Opacity</i></p> <p>This value determines to what extent pictograms that are not highlighted should be hidden. The value starts at 0.0 (completely hidden) and ranges up to 1.0 (completely visible).</p>	<div><p><b>Selection</b> ^</p><p>Fade Out Opacity</p><p>0,2</p></div>
<p><b>License</b></p> <p><i>License Key</i></p> <p>Enter the license key here.</p>	<div><p><b>License</b> ^</p><p>License Key</p></div>

## Labels Tab

### Value Labels

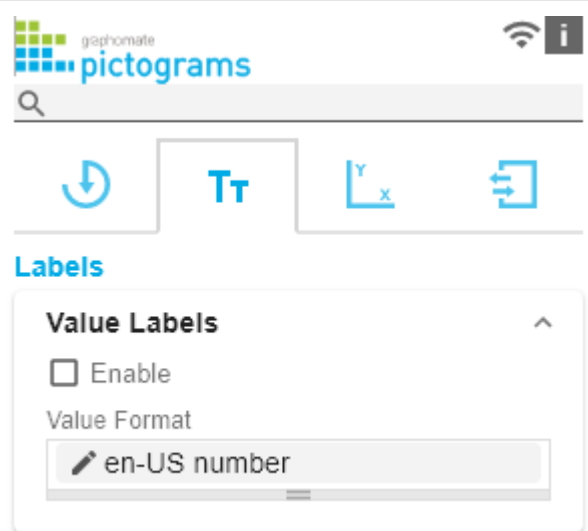
Here you can select whether you want value labels displayed.

#### Value Format

With the Value Format you define the way the values are displayed in the diagram area. You access the configuration by clicking on the element in the list.

#### Value Format Pop-Up

Define the number format using the following options:



- **Locale:** Defines abbreviations, decimal and thousand separators for the respective language. You can choose between *en*, *de*, *fr* and *auto*.
- **Format Type:** Defines the type of number output. You can choose between *number* (decimal number), *percent* (percentage), *ordinal* (ordinal number) and *Time* (time unit).
- **Abbreviations:** Defines the type of abbreviations for all numbers to be formatted. You can choose between *mean* (abbreviation of the mean value), *min* (abbreviation of the minimum value), *max* (abbreviation of the maximum value), *auto* (best-suited abbreviation for the respective number), *trillion* (trillion abbreviation), *billion* (billion abbreviation), *million*, *thousand* and *none* (no abbreviation at all).
- **Negative Sign:** Defines how negative numbers are displayed. You can choose between *minus*, *parenthesis*, and *none* (no sign).
- **Prefix:** The input value is placed before the number.
- **Suffix:** The input value is placed after the number.
- **Thousands Separator:** Replaces the thousand separator set by the selected *locale*.
- **Decimal Separator:** Replaces the decimal separator set by the selected *locale*.
- **Total Digits:** Defines how many digits the number may consist of. *Total Digits* is prioritized over *Decimal Digits*.
- **Decimal Digits:** Defines how many decimal places of the formatted number are displayed.
- **Scaling Factor:** The value of each data point is multiplied by the entered number to scale values.
- **Zero Format:** When the checkbox is activated, any data value equal to 0 (the number zero) is replaced by the entered value.
- **Null Format:** Any data value that equals *NULL* (no value) is replaced by the entered value.
- **Error Format:** If a data value is undefined or the result of an arithmetic error such as dividing by 0 (zero), the data value is replaced by the entered value.
- **Rounding Method:** Defines the rounding method. You can choose between *half up* (23.5 24, -23.5 -23), *commercial* (23.5 24, -23.5 -24) and *trim* (23.5 23, -23.5 23).
- **Explicit Positive Sign:** Defines whether a positive number should always be preceded by a + (plus sign).
- **Time Units:** If *Time* has been specified for the format type, the time units can be set here. The default setting interprets data values as seconds and displays them as hours and minutes with decimal places in the format *h:mm.m*
- **Description:** Defines a description for the set configuration.

Time Unit Pop Up

## en-US number

Locale  
en-US

Format Type  
Number

Abbreviations  
auto

Thousand Separator

Decimal Separator

Total Digits (approx.)

Decimal Digits  
1

Scaling Factor  
1

Prefix

Suffix

Zero Format

Null Format

Infinity Format  
∞

Rounding Method  
commercial

Negative Sign  
minus

Explicit Positive Sign

Description (optional)

OK

For the Format Type *Time*, a system of units can be configured with the help of the Time Units Property, which in the default setting consists of hours and minutes. Each number formatted in this way is then splitted in its values for each unit. The order of the unit list defines their relationship from the largest unit (top) to the smallest unit (bottom). Each unit contains the following options:

- *Modulus*: defines the arithmetic relationship between the units. In terms of modular arithmetic, the number reflects how many entities of the next smaller unit fit into an entity of the current unit. If the current unit is the smallest of the unit system, the modulus establishes the reference to the raw value to be formatted. Thus, in the case of a unit system of hours and minutes with raw values that are given in minutes, the hours unit carries the modulus 60 and the minutes unit carries the modulus 1.
- *Prefix*: Defines the local prefix with which the value of this unit should begin. It can be used as a separator to values of larger units.
- *Suffix*: Defines the local suffix that should follow the value of this unit. For example, it can contain a unit abbreviation or be used as a separator to values of smaller units.
- *Omit If Zero*: Sets whether values of this unit should be omitted if they equal 0.
- *Leading Zeros*: Sets whether values of this unit should be displayed with one or more leading zeros (depending on the reference to the next larger unit).
- *Description*: Sets a description for the unit to make it easier to recognize in the list.

## hours

Modulus  
60

Prefix  
\_\_\_\_\_

Suffix  
\_\_\_\_\_

Omit if Zero

Leading Zeros

Description  
hours

OK

**Font**

*Size*

Specify the font size here. Select a CSS unit from the list (such as *px*, *em*).

*Family*

Define the global font. You can choose between *Arial*, *Tahoma*, *Lucida Console*, *Verdana* and *Calibri* or type in the name of a font which is installed on your system.

*Color*

Specify the font color here.

### Font

Size  
12 px

Family  
Arial

Color  
● #000000

**Title**

If the *Enable* checkbox is activated, the title is displayed.

*Title Text*

Enter a *Title* for the pictograms here. Multiline texts will be rendered accordingly, i.e. the line break will be applied. The following HTML tags can be used for formatting: 'b', 'i', 'p', 'span', 'div', 'br', 'h1', 'h2', 'h3', 'h4', 'h5', 'h6', 'hr', 'ol', 'ul', 'li' and 'blockquote'.

For the following result

ACME Ltd.

**P&L** by *Segment*

2021

this input is necessary:

ACME Ltd.

<b>P&L</b> by <i>Segment</i>

2021

*Font Size*

Specify the font size here. Select a CSS unit from the list (such as *px*, *em*).

*Spacing*

Defines the distance of the header area to the pictogram. Select a CSS unit from the list (such as *px*, *em*).

**Title**

Enable

Title Text

Font Size

14 px

Spacing

10 px

**Category Labels***Suppress Repeating Category Labels*

Controls whether repetitive category labels should be hidden or displayed.

*Members in Categories*

Specify whether the names of the members should be displayed in the category labels.

*Measures in Categories*

Specify whether the member name of the measure/value dimension should be displayed.

*Hierarchical Category Spacing*

Determines the distance between the hierarchical display of category labels. Select a CSS unit from the list (such as *px*, *em*).

**Category Labels**

Suppress Repeating Category Labels

Members in Categories

Measures in Categories

Hierarchical Category Spacing

5 px

**Footer***Footer Text*

Here you can define a text that appears below the pictogram.

*Font Size*

Specify the font size here. Select a CSS unit from the list (such as *px*, *em*).

*Spacing*

Defines the distance between the footer area and the pictogram. Select a CSS unit from the list (such as *px*, *em*).

**Footer** ^ Enable

Footer Text

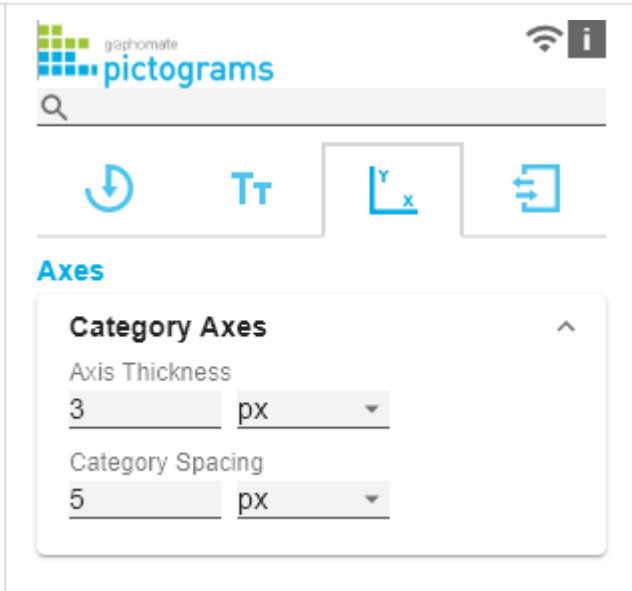
Font Size

14 px ▼

Spacing

10 px ▼

## Axes Tab

<p><b>Category Axes</b></p> <p><i>Axis Thickness</i></p> <p>Specify the width of the category axis here. Select a CSS unit from the list (such as <i>px</i>, <i>em</i>).</p> <p>A specification of <i>0px</i> deactivates the category axis.</p> <p><i>Category Spacing</i></p> <p>Specifies the distance between two categories. Select a CSS unit from the list (such as <i>px</i>, <i>em</i>).</p>	 <p>The screenshot shows the 'graphomate pictograms' application interface. At the top, there is a search bar and navigation icons. Below the search bar, there are four icons: a circular arrow, a text icon 'Tt', a coordinate system icon 'y x', and a square with arrows. The 'Axes' section is expanded, showing a 'Category Axes' panel with two settings: 'Axis Thickness' set to '3 px' and 'Category Spacing' set to '5 px'.</p>
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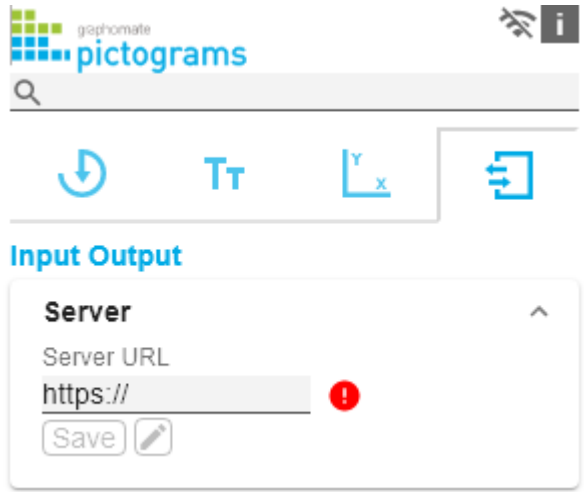
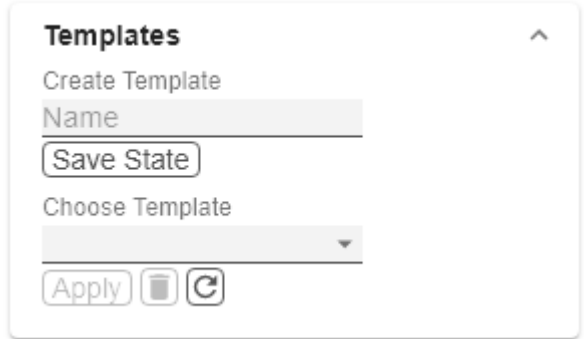
## Input Output Tab

The functions of this tab are used to exchange templates for the graphomate pictograms.

Connect to the graphomate server - a free component of graphomate GmbH - to store or load a graphomate pictograms template.

In this way you can exchange preconfigured graphomate pictograms designs between BI front ends that support the graphomate server.

Currently these are: Power BI, Tableau and SAP Analytics Cloud.

<p><b>Server</b></p> <p>Here you enter the URL of the graphomate server to which the component should connect and from which you want to save or retrieve templates.</p> <p>If you have entered the URL to the server, a green check mark indicates that a connection could be established.</p> <p>If another server is used later, the button next to the save button can be pressed and the server URL can be edited.</p> <p>The hyperlink "<i>Admin</i>" allows you to jump to the admin area of the graphomate server.</p>	
<p><b>Templates</b></p> <p>If the current settings are to be saved as a template, a new template name can be entered in the input field labeled <i>Create Template</i> and confirmed by clicking the <i>Save State</i> button. If the entered name complies with the naming convention, the template is saved on the server and a toast with the corresponding message is displayed in the lower part of the graphomate property sheet. However, if the entered name does not meet the expected naming conventions, an error message with the permitted characters is displayed accordingly.</p> <p>With <i>Choose Template</i> templates stored on the server can be retrieved and applied. To do this, the desired template must be selected and the <i>Apply</i> button must be pressed. If you want to delete a template, you have to select the template in the list and press the <i>Delete (garbage bin)</i> button. If changes have been made to the templates on the server side, you have to click the <i>Refresh</i> button. Changes should then be visible.</p>	



## Known Issues (pictograms)

There are currently no known known issues.

## Known Issues (SAC)

- Our graphomate components can only be used in SAC Application Design, because of SAC restrictions. We expect to support SAC Stories according to SAP's announcement of "Story 2.0" in Q2.2023.
- Supported web browser for SAP Analytics Cloud <https://userapps.support.sap.com/sap/support/knowledge/en/2674150>