User Manual for the graphomate matrix
for SAP Analytics Cloud

ACME Ltd.
Sales in EUR
2018, 2019

	Sales		Δ%
	2018	2019	
▽ Overall	0.8m	1.0m	36.2%
▽ Central	441.9k	0.6m	35.3%
Austria	21.9k	24.6k	11.9%
Belgium	9.5k	17.3k	82.7%
France	231.6k	308.4k	33.2%
Germany	148.0k	216.5k	46.3%
Netherlands	21.1k	23.7k	12.6%
Switzerland	9.8k	7.3k	-25.6%
▽ North	147.0k	233.7k	58.9%
Denmark	3.6k	2.8k	-21.1%
Finland	6.1k	1.1k	-81.4%
Ireland	3.6k	7.2k	101.6%
Norway	3.9k	12.9k	230.8%
Sweden	5.8k	15.6k	167.7%
United Kingdom	124.0k	194.0k	56.4%
▽ South	176.5k	210.6k	19.3%
Italy	79.9k	109.7k	37.2%
Portugal	8.8k	1.8k	-79.2%
Spain	87.8k	99.1k	12.9%

Version 2021.4 – as of December 2021

https://www.graphomate.com

graphomate .ıl

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Introduction

The **graphomate matrix** is our new table component for Power BI, Tableau and SAP Analytics (Analytics Cloud (SAC) and Lumira Designer).

This allows you to easily realize IBCS-compliant tables, but also to perform various (conditional) formatting, because the graphomate matrix can be designed using its own formatting language - the so-called Cell Formatting Language (CFL). When developing the graphomate matrix, the focus was on performance, horizontal and vertical scrolling, hierarchy displays in rows and columns, and graphical visualization elements:

	Profit	Profit FC	abs	perc
⊿ ACME	372.8k	377.0k	-4.1k	-1%
▽ Consumer	188.7k	199.8k	-11.1k	-6%
⊿ Corporate	123.4k	114.9k	8.5k	7%
⊿ Art	8.0k	16.0k	-8.1k	-50%
Central	5.5k	7.3k	-1.8k	-24%
South	2.0k	5.0k	-3.1k	-61%
North	0.5k	3.7k	-3.2k	-87%
⊿ Paper	2.4k	12.9k	-10.5k	-81%
Central	1.2k	10.6k	-9.4k	-89%
North	0.4k	1.2k	-0.8k	-67%
South	0.8k	1.1k	-0.3k	-24%

The graphomate matrix replaces the **graphomate tables,** which we have been offering since 2014. Although the graphomate tables offered the possibility to map IBCS requirements to a table with just a few clicks. However, our customers wanted more formatting options and better performance, especially for large tables. We intend to offer the graphomate matrix not only for the SAP Analytics Cloud (SAC) and Lumira Designer step by step but also for other SAP Analytics front-ends.
Unfortunately, the SAP Partner Interface (SDK) for SAC currently does not offer the possibility to connect data directly. This is announced for H1.2021. Currently, unfortunately, a script workaround must be worked with to transfer data from a SAC standard visualization element to the graphomate matrix.

In the following we describe the properties of the graphomate matrix as well as the possibility to set them in our user interface. This user interface is almost identical in all BI front ends - Power BI, Tableau, SAC and Lumira Designer. Formatting settings of the graphomate matrix 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'.

The upload of the contribution.json is done as described below::

1. Choose from Main Menue / Browse / Custom Widgets
2. Use the '+'-symbol to select and store the graphomate JSON

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

Quick Start

Using a graphomate matrix in an Analytic Application and data connection (workaround necessary)

Currently, SAP has not yet released the data binding via the SDK of the SAC, which is why a short script is required to bind data at runtime. Data sources in the SAC Application Designer are currently always connected with widgets. Therefore it is first necessary to connect a standard table with a data source and to execute the desired selection. Afterwards the following script text can be used in the onInitialization script to transfer the data of the standard table to the matrix.

The following script should be used:

```
graphomate_matrix_1.setResultSetFromTable(Table_1);
```

Open the graphomate property sheet (GPS)

Settings for the components are set via the graphomate property sheet (GPS). Select the graphomate matrix 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
- Labels Tab
- Axes Tab
- Chart Specific Tab
- Input Output Tab
- Default values

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

Search field

Use the search field to quickly find a setting (example "Title") and change it.

Connection to the graphomate server

active connection to graphomate server

no active connection to the graphomate server

Info Tab

In the header of the GPS there is an info symbol ( ). Click on the icon to open a tab with relevant information:

- the version number of the installed extension (important information for the support)
- link to the graphomate Support Desk
- to the general terms and conditions
- to the graphomate website and
- a list of the software libraries used (Credits)

Checkboxes

An active property is indicated by a white check mark in the checkbox. To deactivate it, click on the checkbox again.

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
W3sic2hvcnQiOiJBQyIsIl

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

☑ Enable

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 ![CSV] symbol allow the definition of settings on the graphomate property sheet in two

variants. The mode can be changed by clicking on the ![CSV] 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 Assignement (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,
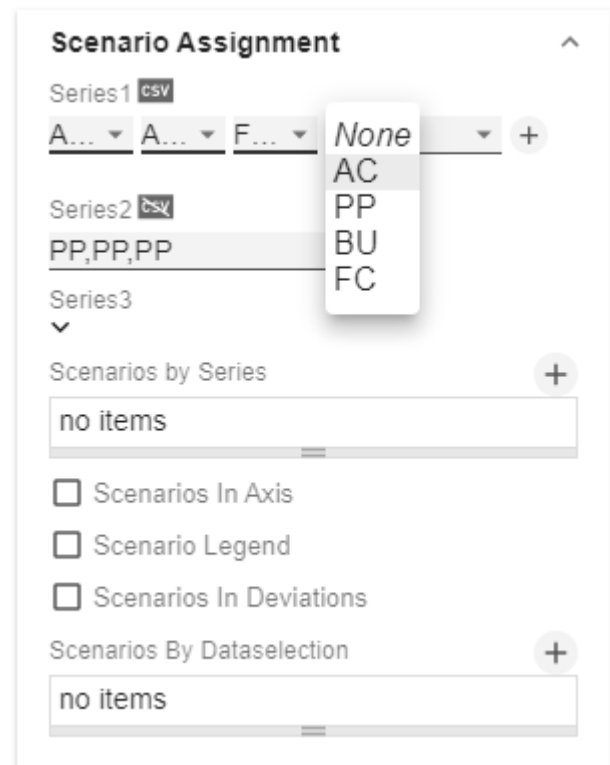
Data Tab

Calculation

Deviations

This property can be used to calculate deviations. It is a list, where each individual item represents the calculation of a new deviation member. The variances are calculated as follows:

Absolute: Minuend - Subtrahend
Percentage: (Minuend - Subtrahend) / |Subtrahend|

> ⓘ Please note: At this point the values for deviations are only calculated. You have the possibility to visualize these calculated values on the tab "Chart Specific".

Deviations Pop-Up

You can create new variances using the ⊕ sign. Each configuration has the following properties:

- *New Member Name:* The unique name of the newly calculated member that is displayed in the table.
- *Type:* Either *Absolute* or *Percent.* Defines whether an absolute or relative deviation is calculated.
- *Target Dimension:* The dimension in which the new, calculated deviation member should be inserted - e.g. "measures".
- *Minuend Member:* The member that is to serve as a minuend, e.g. an actual value.
- *Subtrahend Member:* The member that is to serve as subtrahend, e.g. a value from the previous year.
- *Filter* (optional): A list of filter objects. Each filter object can restrict a dimension to certain members. Only deviation data points are created that correspond to the filter conditions.
- *Description:* Short name that describes the configuration to be recognizable e.g. "abs"

Calculated Members

Calculate additional columns, rows or members using formula input.

Calculated Members Pop-Up

You can create new calculated members using the ⊕ sign. Each configuration has the following properties:

- ■ *New Member Name:* The unique name of the newly calculated member that is displayed in the table.
- ■ *Target Dimension*: The dimension in which the new, calculated member should be inserted - e.g. "measures".
- ■ *Expression:* An expression to be evaluated for each calculated data point. Here, the keys of members of the dimension are encapsulated in curly brackets with leading $. (e. g. ${member1}). This results in the following possibilities, for example::
  - ● Ratio of two members: ${member1}/${member2}
  - ● Conversion of working hours into working days: ${workinghours} / 8
  - ● Calculation of new measures: ${Sales}-${Costs}

  You can find a detailed description of the syntax here

- ● *Filter (optional): A list of filter objects. Each filter object can restrict a dimension to certain members. Only calculated member data points are created that correspond to the filter conditions.*
- ● *Description (optional): Short name that describes the configuration to be recognizable e.g. "abs"*

N + Rest

Define how many elements should be mapped as Top N or Bottom N with Rest representation.

N + Rest Pop-Up (Top 3)

You can create new groups for N + rest using the ⊕ - sign. Each configuration has the following properties:

- ● *Enable*: Applies the N + Rest Confuration, when enabled.
- ● *Mode:* Choose between Top (top) and Bottom (bottom).
- ● *Number n of top/bottom members*: Define the number of top/bottom elements.
- ● *Target Dimension*: The dimension into which the new top/bottom member should be inserted - e.g. "measures".
- ● *Target Dimension Filter (optional)*: Here you filter which members of other column dimensions should affect the ranking. If there is more than one column member and there is no filter defined, the ranking of a row is based on the sum of all columns.
- ● *Rest Member Name (optional)*: Sets a label for the rest member.
- ● *Description (optional):* Short name describing the configuration to be recognizable.

Sort Configurations

Deviation

☑ Enable

New Member Key
....

New Member Name
_____

Type
Absolute   ▼

Target Dimension
....▼

Minuend Member
....▼

Subtrahend Member
....▼

Filter   ↙ ↗ ＋

no items

Description (optional)

OK

Here you can sort members of dimensions. Measures are also interpreted as a dimension and can be sorted accordingly.
In future versions we will extend these options.

Sort Configurations Pop-up

You can use the + sign to create a new sort order for a dimension. Each configuration has the following properties:

- *Dimension:* A dimension the members of which should be sorted.
- *Member:* Here you can use drag and drop to sort the members of a dimension or measures.
- *Description:* Short name describing the configuration to be recognizable

Calculated Aggregation

You can create aggregations that differ from the standard for certain dimensions. Use this, for example, to create a different aggregations for each column.

Calculated Aggregation Pop-Up

You can use the + sign to create a new aggregation. Each aggregation configuration has the following properties:

- *New Member Name:* The unique name, of the newly aggregated aggregation member, that will be displayed in the table.
- *Target Dimension:* The dimension into which the new aggregation should be inserted - e.g. "measures".
- *Aggregation Type:* You can choose between Sum (Sum), Minimum (Min), Maximum (Max), Count (Count) and Mean (Mean).
- *Filter (optional):* A list of filter objects. Each filter can restrict a dimension to specific members. Only data points are created which match the specified members for the dimensions selected in the filter.
- *Description (optional):* Specifies a descriptive short name for the set configuration.

Aggregation Type

The graphomate matrix calculates aggregations for displaying hierarchy nodes, if the host environment doesn't provide them.
Here you select the type for the aggregations. You can choose between sum *(Sum),* minimum *(Min),* maximum *(Max),* arithmetic mean *(Mean),* geometric mean (*Geometr. Mean*), count *(Count),* empty *(Null)* and no aggregation *(None).* This feature, not to be confused with Calculated Aggregations, is much simpler and creates the chosen Aggregation Type for all columns.

calculation

☑ Enable

New Member Name
....

New Member Name
_____

Target Dimension
_____ ▼

Expression
_____

Filter   ↙ ↗ +
no items
_____

Description (optional)
_____

OK

TOP 3

☐ Enable

Mode
Top   ▼

Number n of top/bottom members
3
_____

Target Dimension
_____ ▼

Target Dimension Filter   ↙ ↗ +
no items
_____

Rest Member Name (optional)
_____

Description (optional)
_____

OK

Aggregation Node Name

At this point, a separate name can be assigned to the aggregation elements - e.g. "Sum" or Total" or also "Europe".

Following Result Nodes

Change the position of the totals to precede or follow its child nodes.

Hyper Axis Config

New hyper axes can be created here. These are additional axes of the data projection (in addition to the known Columns and Rows axes of a normal, two-dimensional projection). This allows multiple data values to be assigned to a cell of the matrix to display in-cell visualizations, like sparklines, from multiple values.

Hyper Axis Config Pop Up

You can create new hyper axes using the ⊕ - sign. Each configuration has the following properties:

- *Name*: the name of the axis. It can be selected in hyper features such as sparklines to specify which axis to visualize.
- *Dimensions*: Dimensions assigned here will be moved from the default Rows or Columns axis to the hyper axis.
- *Enable*: Sets whether the axis configuration should be applied.

Sort Configuration 1

Dimension
Measures ▾

Members
gross
budget
imdb_rating

Description (optional)

OK

aggregation

☑ Enable
New Member Key
Overall

New Member Name
Overall

Target Dimension
▾

Aggregation Type
Sum ▾

Filter   ↙ ↗ +
no items

Description (optional)

OK

Hyper Axis Config

Identifier

Name

Dimensions

☑ Enable

OK

Scenario Definition

This property determines the appearance of the scenarios - also known as Data Types.
The four standard scenarios of the International Business Communication Standards are already defined, but can also be adapted.

You can create new scenarios using the + sign.

Scenario Definition Pop-Up

Each scenario has the following characteristics:

- *Identifier*: A character string (such as AC) that can be used to reference the scenario - for example, in the Scenario Assignment below, for bar, pin, and background bars or their axes - see the tab "Chart Specific".
- *Color*: Here you can define the color using the color picker or enter a HEX, RGB or HSL code. You can switch these using the small arrows on the right side of the color picker.
- *Fill Type*: You can choose from the following fill patterns: *Filled,* without filling *(Empty),* hatching down (*Hatched Down*), hatching thick down (*Hatched Down Bold*), hatching up (Hatched Up), hatching thick up (*Hatched Up Bold*), and dotted *(Dotted).*
- *Shape*: Refers to the pinheads. The following shapes are available: circle *(circle),* rectangle *(rect),* rhomb *(rhomb), wedge (wedge),* no symbol *(none).*
- *Width*: This property is not used in the graphomate matrix.
- *Font Weight*: Choose between *normal* or *bold* font size for this scenario.

Import/Export

Copy this string to use scenarios in other graphomate components.

Scenario Definition

AC
PP
BU

Import / Export
W3sic2hvcnQiOiJBQyIsIl

AC

Identifier
AC

Color
#222222

Fill Type
Filled

Shape
rect

Width
40   %   px

Font Weight
normal

OK

Scenario Assignment

Scenarios in Column Headers

This property ensures that the scenarios are displayed as bars below the column headers.

You can use the ＋ sign to create assignments of scenarios to dimension members.

Scenario Assignment Pop-Up

This property assigns scenarios to data cells.

Each configuration has the following properties:

- *Scenario Id*: The ID of the scenario to be used. A scenario ID used here, has to be defined in the scenario definition.
- *Filter*: The selected scenario is assigned for each dimension member that is selected here using the ＋ sign.
- *Description:* Short name describing the configuration to be recognizable.

Data Selection

Selection Type

Specify how cells can be selected by the user. The following modes are available:

- *None*: Cells can not be selected.
- *Single*: Only a single cell can be selected at the same time
- *Multi:* multiple cells can be selected using the CTRL key.

License

License Key

Enter the license key here

Labels Tab

Title

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

Title Text

Enter a *Title* for the matrix 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 AC, BU

this input is necessary:

ACME Ltd.
P&L by <i>Segment</i>
2021 AC, BU

Size

Enter the size of the title's font. Select a CSS unit from the list (such as px, em),

Font

Size

Enter the size of the font. Select a CSS unit from the list (such as px, em),

Family

Define the global font. Clear the contents of the text box, and then choose *Arial, Tahoma, Verdana, Lucida Console* a nd *Calibri* from the suggested values. Alternatively, you can enter the name of a font installed on your system, even if no suggestions are displayed. For example, enter *Comic Sans MS*.

Color

This property defines the font color as HEX, RGB or HSL code. You can open a color picker by clicking on the colored circle and switch the color model by using the small arrows on the right.
Alternatively, you can also use the color picker.

Crop Header Texts

When this option is selected, long character strings are not wrapped but abbreviated with three dots - e.g. electronic prod...

Font	^
Size	
12	px ▾
Family	
Arial	▾
Color	
● #000000	
☐ Crop Header Texts	

Value Format

With the Value Format you define the way the values are displayed in the matrix. You can define several formats and assign them to specific columns using filtering.

> ℹ Multiple Value Format Rules (Assignments) are prioritized in descending order, i.e. definitions that are lower in the list overwrite those above them when there filters overlap. Therefore, the generally valid format of the table should be defined at the top of this list without any further filters. Value Formats defined below, restricted by filters, overwrite the formatting defined above - "From General to Special".

Value Format Assignment

You can access the configuration by clicking on an element in the list. You define another Value Format by clicking on the ➕ symbol.

Value Format Pop-Up

Define the number format using the following options:

Value Format	^
Value Format Assignment	➕
☑ ✏ en-US number	
Text Align	
left center **right**	

- *Filter:* By clicking in the empty list or on the ＋ symbol, you can define one or more dimension members for which these format settings should apply. For example, you select a measure column using the dimension "measures" and the actual measure (e.g. "gross") of the column to be formatted.
- *Locale:* Defines abbreviations, decimal and thousand separators for the respective language. You can choose between *en*, *de*, *fr* and *auto*. If *auto* is selected, the Locale set in the respective host application is used.
- *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. You can choose between *mean* (abbreviation most suitable for the mean value), *min* (abbreviation most suitable for the minimum value), *max* (abbreviation most suitable for the maximum value), *auto* (best-suited abbreviation for each respective number individually), *trillion* (trillion abbreviation), *billion* (billion abbreviation), *million*, *thousa nd* and *none* (no abbreviation at all). With this property you can, for example, ensure that numerical values are always displayed in thousands - e.g. 0.1k or 1000k.
- *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) gets replaced by the entered value.
- *Null Format:* Any data value that equals *NULL* (no value) gets 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), *com mercial* (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).

en-US number

☑ Enable

Filter ↙ ↗ ＋

no items

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)
_____

- *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:* Short name that describes the configuration to be recognizable

Time Units Pop-Up

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.

Text Alignment

Specify how text content is aligned in the matrix: left-aligned (left), centered (center) and right-aligned (right).

Scripted Formatting

CFL Rules

Learning from the usage of other table components we decided to offer our customers a possibility to format the graphomate matrix very individually according to their requirements. The Cell Formatting Language (CFL) enables you to define rules which are executed for each cell of the matrix. These rules can be used to manipulate the appearance of cells based on cell properties, data properties or matrix properties. In this way, you can create a heat map, color elements, or apply conditional formatting with a few lines of code.

> **ⓘ** Cell Formatting Language:
>
> The CFL is a script language for individual formatting of the graphomate matrix based on JavaScript syntax. It allows to read from and write various properties to the global variable *cell* via *getter* and *setter*. A complete API documentation can be found here.
>
> To simplify the programming of the CFL, we provide a web-based CFL editor from which the defined rules can be easily copied and pasted into the script body. This editor and some code templates can be found here.
>
> For all CSS properties and values that can be set in the CFL, the usual notations apply.

CFL-Pop-Up

The following properties can be defined:

- *Enable:* This Boolean property makes it possible to (de)activate the rule.
- *Name:* A name that is used to identify the rule.
- *Script Body*: This String property contains the actual script in the CFL (Cell Formatting Language)

> **ⓘ** You can find the CFL editor here.

CFL Variables

At this point you can define your own variables that you want to use in a CFL rule. In The CFL Rule, the variable is accessed via the .getCflVariable method. The value of the variable must comply with the JSON format (examples: 5 or "center" or [1,2,3] or null or {"foo": "bar"}.

CFL Variables Pop-Up

The following properties can be defined:

Scripted Formatting ^

CFL Rules ＋

no items

CFL Variables ＋

no items

Custom CSS ＋

no items

my cfl rule

☑ Enabled

Name

my cfl rule

Script Body

Use our online editor and copy your CFL rule here

OK

:
:

Identifier

Value

OK

- *Identifier*: Assign a unique name that can be referenced in a CFL rule.
- Value: The value of the variable must be according to the JSON format (examples: "car" for a string or 3.14159 for a numerical value).

Custom CSS

Use CSS code directly for the matrix if you cannot address complex selectors in the styling via the CFL.

Custom CSS Pop-Up

The following properties can be defined:

- *Enable:* This boolean property allows to (de)activate the CSS snippet.
- *Name:* A name which is used to identify the CSS snippet.
- *CSS*: Here the CSS is inserted, which can consist of several CSS snippets.

my css

☑ Enable

Name
my css

CSS

OK

Hierarchy Nodes

Here you control the color and font style of the hierarchy nodes in the table.

Color

Here you define the font color of the Hierarchy Nodes. The color overwrites the general font Color from the Font group. 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.

Bold

If you want hierarchy nodes to be displayed in bold, activate this property.

Italic

If hierarchy nodes should be displayed in italics, activate this property.

Row Indentation

Specify the size of the indentation of hierarchy nodes here. The indentation that is ultimately used is a multiple of the indentation set here and depends on the hierarchy level of the respective node. Select a CSS unit from the list (such as *px, em*).

Column Indentation

Hierarchy Nodes ⌃

Color
● #000000

☑ Bold

☐ Italic

Row Indentation
1,2   em ▾

Column Indentation
0,5   em ▾

Node Divider Thickness
0,1   em ▾

Extra Row Padding
0   em ▾

Node Divider Color
◯ #D3D3D3

☑ Node Divider

☑ Following Node Divider

☑ Collapsible

☐ Collapsible On Whole Cell

Set the size of the indentation of columns here. The final indentation used is a multiple of the indentation set here, and is based on the hierarchy level of the node in question. Select a CSS unit (such as *px, em*) from the list,

Node Divider Thickness

Set the thickness of the horizontal separator lines below cells whose rows represent hierarchy nodes. All other separators can be set in the tab *Axes.*

Extra Row Padding

Set here the value of the additional line spacing that will be applied to separate groups of child nodes and their parent nodes from each other. Choose a CSS unit from the list (such as *px, em*),

Node Divider Color

Here you can set the color of the horizontal separator lines below cells whose rows represent hierarchy nodes. All other separators can be set in the tab *Axes.*

Following Node Divider

This setting determines whether lines before or after a hierarchy node are interpreted as a separator line of the hierarchy node. All other separators can be set in the tab *Axes.*

Collapsible

If the hierarchy should be expandable and collapsible, activate the *Collapsible* property.

Collapsible On Whole Cell

If this property is activated, clicking anywhere into a cell causes the hierarchy node to expand or collapse. Selecting entire rows is not possible this way. If this property is inactive, only a click on the triangle causes the collapse, while a click on the rest of the cell only results in a selection of the row.

Styling

Matrix Background Color

Determine the background color of the matrix using Color Picker or HEX, RGB or HSL code. You can switch this using the small arrows on the right side of the color picker.

Matrix Padding

This property determines the outer padding of the matrix component. Select a CSS unit (such as px, em) from the list.

Styling	⌃
Matrix Background Color	
◯ #FFFFFF	
Matrix Padding	
10	px ▾

Footer

Footer Text

Enter the Footer text for the matrix in this field. Multiple-line texts are reproduced accordingly, i.e. the line break is adopted.

Size

Enter the footer's font size. Select a CSS unit from the list (such as px, em),

Footer	⌃
☐ Enable	
Footer Text	
Size	
12	px ▾

Axes Tab

Columns

Default Width [px]

At this point, define the default value for column width in px. The value *auto* causes the available space of the matrix to be divided among all columns that are assigned the d*efault* width, i.e. all columns for which the *Width Per Column* property does not specify a different value.

Width Per Column [px]

This property can be used to set an individual width for each column of the matrix. The column at position 0 corresponds to the row titles. The width is specified in pixels.
For a table with one row title column, two data columns and one deviation column, a possible list looks like this: [200, auto, auto, 300].
If the value *default* is set for one or more columns, then the value of the Default Width property (described above) is used for them. If the value *auto* is set for one or more columns, then the remaining space of the matrix component is automatically divided among these columns so that no scrollbar is created. If the value *hide* is selected, the corresponding column will be hidden. Hiding is done only visually. When specifying indices e.g. in the CFL, hidden columns are still counted.

Via the csv button you have the possibility to enter the column widths as comma-separated values.

Column Margins

This property sets the distance between columns, in any CSS length unit.

Supress Repeating Header

If members repeat themselves consecutivley in a column header row, this property can be used to display them only once in succession.

Header Dividers

Here you can set the visibility of the horizontal separator lines below column header cells.

Header Divider Thickness

Here you can set the thickness of the horizontal dividing lines of column header cells. Select a CSS unit from the list (such as px, em).

Header Divider Color

Here you set the color of the horizontal separator lines of column header cells as HEX, RGB or HSL code. You can switch this using the small arrows on the right side of the color picker, which can be opened by clicking on the colored circle.

Header Text Align

Set here whether column headers should be left-aligned, right-aligned or centered.
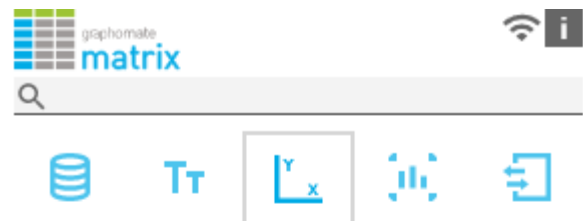
Rows

Suppress Repeating Row Header

If members repeat themselves consecutivley in a row header column, this property can be used to display them only once in succession.

Dividers

Here you set the visibility of the horizontal separator lines below data cells and row header cells whose rows are leaves of a hierarchy. That includes all rows which are neither column headers nor hierarchy nodes.

Divider Thickness

Set the thickness of the horizontal separator lines below cells whose rows are leaves in a hierarchy. That includes all rows which are neither column headers nor hierarchy nodes. Select a CSS unit from the list (such as px, em),

Divider Color

Here you set the color of the horizontal separator lines below cells whose rows are leaves in a hierarchy. That includes all rows which are neither column headers nor hierarchy nodes. Set the color as HEX, RGB or HSL code. You switch this using the small arrows on the right side of the color picker which can be opened by clicking on the colored circle.

Initial Expand Level

Here you can set the starting drilldown state of the row hierarchy. "0" only shows the root node on the initial loading of the matrix. You need to reload the matrix or reopen your dashboard in order to see the initial expand level applied.

Alternate Row Styling

This property makes the rows of the matrix alternately white and light gray which makes it easier to perceive individual rows.

Crosstab-like Row Headers

Activate this property to split up the row header's hierarchy levels into separate columns.

Rows ⌃

☑ Suppress Repeating Row Header

☑ Dividers

Divider Thickness

0,05   em ▾

Divider Color

⚪ #D3D3D3

Initial Expand Level

☐ ⋯⋯⋯⋯⋯⋯⋯⋯

☐ Alternate Row Styling

☐ Crosstab-like Row Headers

Chart Specific Tab

Deviation Charts

In this tab you configure visual elements like bar or pin charts in the graphomate matrix.

Bar Chart Assignment

This property determines which data should be displayed as an In-Cell Bar Chart type instead of a number. This can be both source data and calculated measures - tab *Data*: *Calculations.* This is a list, whereby each individual list element represents an independent configuration.

Click on the ➕ sign or in the empty list to make settings for the bar charts.

Bar Chart Assignment Pop-Up

- *Filter:* By clicking in the empty list or on the ＋ symbol, you can define one or more dimension members for which the bar charts should be displayed. You could, for example, select the dimension "measures" and the member "Revenue" to display bar charts in all columns representing the measure "Revenue".
- *Scenario Id for Axis*: Sets a defined scenario for the axis.
- *Scenario Id for Bar*: Sets a defined scenario for the bar. Scenarios are defined on the first tab *Data.*
- *Comparison Group ID*: All In-Cell-Bar Charts of a graphomate matrix with an identical Comparison Group ID - any string - are scaled in the same way.
- *Labels:* determines whether the value of the cell should be displayed as a label next to the chart's bar.
- *Negative Value is Good*: To swap the meaning of negative and positive colors, activate this property.
- *Use Outlier Threshold:* Specify here whether the Outlier Thresholds should be applied to the scaling.
- *Positive Outlier Threshold*: Describes the upper limit value of the scaling. All values that are greater than this limit value are displayed as outliers and are not included in the scaling. The next lower value of the scale or total scale (if a Comparison Group is used) then determines the new maximum of the scaling.
- *Negative Outlier Threshold*: Describes the lower limit value of the scaling. All values that are smaller than this limit value are displayed as outliers and are not included in the scaling. The next larger value of the scale or total scale (if a Comparison Group is used) then determines the new minimum of the scaling.
- *Use Specific Good Color*: If this setting is activated, the general default color value of the deviation charts (*Default Good Color*) for this bar chart configuration will be overwritten with the value selected in this configuration. Set the color for positively evaluated deviations by clicking on the associated color field using the color picker or as HEX, RGB or HSL code.
- *Use Specific Bad Color*: If this setting is enabled, the general default color value of the deviation charts (*Default Bad Color*) for this bar chart configuration will be overwritten with the value selected in this configuration. Set the color for negatively evaluated deviations by clicking on the associated color field using the color picker or as HEX, RGB or HSL code.
- Description: Short name that describes the configuration to be recognizable.

Pin Chart Assignment

Bar Charts

☑ Enable

Filter ↙ ↗ ＋

no items

Scenario Id for Axis
None ▼

Scenario Id for Bar
None ▼

Comparison Group Id

☑ Labels

☐ Negative Value is Good

☐ Use Outlier Threshold

Positive Outlier Threshold
1000

Negative Outlier Threshold
-1000

Specific Good Color
☐ ● #8cb400

Specific Bad Color
☐ ● #ff0000

Description (optional)
Bar Charts

OK

This property determines which data should be displayed as an In-Cell Pin Chart type instead of a number. This can be both source data and calculated measures - tab *Data*: *Calculations.* This is a list, whereby each individual list element represents an independent configuration.

Click on the ⊕ sign or in the empty list to make settings for the pin charts.

Pin Chart Assignment Pop-Up

- *Filter(optional, Pop-Up):* By clicking in the empty list or on the ⊕ symbol, you can define one or more dimension members for which the pin charts should be displayed. You could, for example, select the dimension "measures" and the member "Revenue" to display pin charts in all columns representing the measure "Revenue".
- *Scenario Id for Axis*: Sets a defined scenario for the axis.
- *Scenario Id for Pin*: Sets a defined scenario for the pin. Scenarios are defined on the first tab *Data.*
- *Comparison Group ID*: All In-Cell-Pin Charts of a graphomate matrix with an identical Comparison Group ID - any string - are scaled in the same way. In a later release this will also be possible across multiple graphomate matrix instances.
- *Labels:* determines whether the value of the cell should be displayed as a label next to the chart`s pin.
- *Apply Scenario Color to Pin Head:* If this setting is activated, the color of the defined scenario is used for the pin head.
- *Pin Line on Top:* Displays the line of the needle in the foreground (in front of the needle head).
- *Negative Value is Good*: To swap the meaning of negative and positive colors, activate this property.
- *Use Outlier Threshold*: Specify here whether the Outlier Thresholds should be applied to the scaling.
- *Positive Outlier Threshold*: Describes the upper limit value of the scaling. All values that are greater than this limit value are displayed as outliers and are not included in the scaling. The next lower value of the scale or total scale (if a Comparison Group is used) then determines the new maximum of the scaling.
- *Negative Outlier Threshold*: Describes the lower limit value of the scaling. All values that are smaller than this limit value are displayed as outliers and are not included in the scaling. The next larger value of the scale or total scale (if a Comparison Group is used) then determines the new minimum of the scaling.

Pin Charts

☑ Enable

Filter   ↙ ↗ +

no items

Scenario Id for Axis
None   ▾

Scenario Id for Pin
None   ▾

Comparison Group Id

☑ Labels

☐ Apply Scenario Color to Pin Head

☐ Pin Line on Top

☐ Negative Value is Good

☑ Use Outlier Threshold

Positive Outlier Threshold
2

Negative Outlier Threshold
-2

Good Color
☐ ● #8cb400

Bad Color
☐ ● #ff0000

Description (optional)
Pin Charts

OK

- *Use Specific Good Color*: If this setting is activated, the general default color value of the deviation charts (*Default Good Color*) for this pin chart configuration is overwritten with the value specified in this configuration. Set the color for positively evaluated deviations by clicking on the associated color field using the color picker or as HEX, RGB or HSL code.
- *Use Specific Bad Color*: If this setting is enabled, the general default color value of the deviation charts (*Default Bad Color*) for this pin chart configuration will be overwritten with the value specified in this configuration. Set the color for negatively evaluated deviations by clicking on the associated color field using the color picker or as HEX, RGB or HSL code.
- Description: Short name that describes the configuration to be recognizable.

Default Good Color

Here you can set the color for positive connoted values by clicking on the corresponding colored circle to open the color picker.

Default Bad Color

Here you can set the colors for negatively connoted values by clicking on the corresponding colored circle to open the color picker.

Outlier Style

Here you can select how outliers are displayed. In *SHORT* mode, the outliers are displayed as small triangles on the axis. In *LONG* mode, however, the outliers are displayed over the entire available area according to IBCS rules.

Label Size

Enter the size of the font in the deviation charts. Choose a CSS unit (such as *px, em*) from the list.

Background Bars

Background Bar Assignment

This property determines which data should be displayed as an In Cell Background Bar instead of a number. This is a list, whereby each individual list element represents an independent configuration.

Click on the $+$ sign or in the empty list to make settings for the background bars.

Background Bar Assignment Pop-Up

- *Filter(optional, Pop-Up):* By clicking in the empty list or on the ✛ symbol, you can define one or more dimension members for which the background bars should be displayed. You could, for example, select the dimension "measures" and the member "Revenue" to display pin charts in all columns representing the measure "Revenue".
- *Scenario Id*: Sets the defined scenario for the background bar. Scenarios are defined on the first tab *Data.*
- *Comparison Group ID*: All background bars of a graphomate matrix with an identical Comparison Group ID - any string - are scaled the same way. In a later release this will be possible across multiple graphomate matrix instances.
- *Negative Value is Good*: To swap the meaning of negative and positive colors, activate this property.
- *Use Outlier Threshold:* Specify here whether the Outlier Thresholds should be applied to the scaling.
- *Positive Outlier Threshold*: Describes the upper limit value of the scaling. All values that are greater than this limit value are displayed as outliers and are not included in the scaling. The next lower value of the scale or total scale (if a Comparison Group is used) then determines the new maximum of the scaling.
- *Negative Outlier Threshold*: Describes the lower limit value of the scaling. All values that are smaller than this limit value are displayed as outliers and are not included in the scaling. The next larger value of the scale or total scale (if a Comparison Group is used) then determines the new minimum of the scaling.
- *Use Specific Good Color*: If this setting is activated, the general default color value of the In-Cell bars (*Default Good Color*) for this chart configuration is overwritten with the value specified in this configuration. Set the color for positively evaluated deviations by clicking on the associated color field using the color picker or as HEX, RGB or HSL code.
- *Use Specific Bad Color*: If this setting is enabled, the general default color value of the In-Cell bars (*Default Bad Color*) for this pin chart configuration will be overwritten with the value specified in this configuration. Set the color for negatively evaluated deviations by clicking on the associated color field using the color picker or as HEX, RGB or HSL code.
- *Specific Opacity*: This value determines to what extent the in-cell bars of the selected configuration should be hidden. The value starts at 0.0 (completely hidden) and goes up to 1.0 (completely visible). Values in between make the bars appear semitransparent.
- *Description*: Short name that describes the configuration to be recognizable.

Default Opacity

Background Bars   ⌃

Background Bar Assignment   ✛

no items

Default Opacity

0,3

Default Good Color

🔵 #4dacc6

Default Bad Color

🔴 #c6674d

☐ Background Bar Negative Right to Left

This value determines to what extent the in-cell bars should be hidden. The value starts at 0.0 (completely hidden) and goes up to 1.0 (completely visible). Values in between make the bars appear semitransparent.

Default Good Color

Here you can set the color for positive connoted values of background bar cells by clicking on the corresponding colored circle to open the color picker.

Default Bad Color

Here you can set the color for negative connoted values of background bar cells by clicking on the corresponding colored circle to open the color picker.

Background Bar Negative Right To Left

If this property is active, background bars representing a negative value start at the right edge of the cell.

Background Bar Charts

☑ Enable

Filter

no items

Scenario Id

None

Comparison Group Id

☐ Negative Value is Good

☐ Use Outlier Threshold

Positive Outlier Threshold

1000

Negative Outlier Threshold

-1000

Good Color

☐ ● #4dacc6

Bad Color

☐ ● #c6674d

Specific Opacity

☐ 0,3

Description (optional)

Background Bar Charts

OK

Hyper Charts

This property determines which data should be displayed as a hyper chart in the background instead of a number. This is a list, where each individual element represents an independent configuration.

Click on the + sign or in the empty list to configure settings for the sparklines.

Hyper Chart Assignment Pop Up

- *Enable:* If the checkmark is set, the sparkline appears in the matrix.
- *Include Aggregates*: If this option is enabled, aggregation, for example sums, will be drawn in the sparkline. By default, this setting is disabled to counteract the distorted display of the sparkline.
- *Target Hyperaxis*: Select from one of the defined Hyper Axis (configuration on the Data Tab). The selected hyper axis contains the data for the visualization.
- *Filter:* By clicking in the empty list or on the + symbol, you can define one or more dimension members for which the sparkline should be displayed. You could, for example, select the dimension "measures" and the member "Revenue" to display sparklines in all columns representing the measure "Revenue".
- *Curve Type*: For the Curve Type, choose between Linear (straight line between each data point) or Smooth (rounded curves).
- *Descriptions* (optional): Short name that describes the configuration to be recognizable.

General Charting

Outlier Style

Here you select how accurately outliers are displayed. In *Short* mode, the outliers are displayed as small triangles on the axis. In *Long* mode, on the other hand, the outliers are displayed over the entire available area - in accordance with the rules according to IBCS.
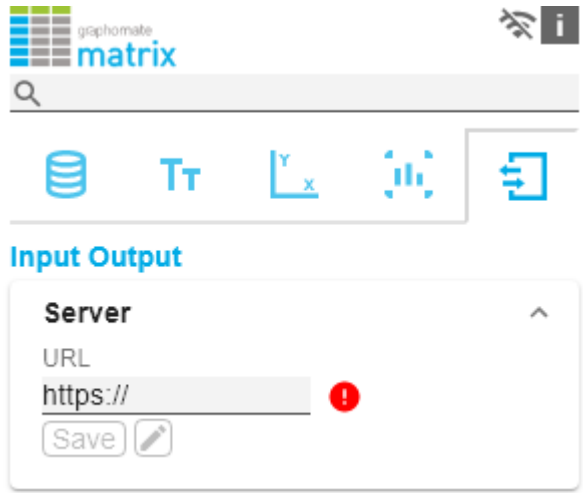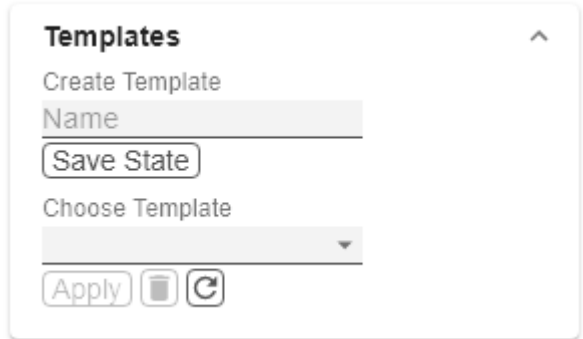
Input Output Tab

The functions of this tab are used to exchange templates for the graphomate matrix. Connect to the graphomate server - a free component of graphomate GmbH - to store or load a graphomate matrix template. This way you can exchange preconfigured graphomate matrix designs between BI frontends that support the graphomate server. Currently these are: Power BI, Tableau, Excel, Lumira Designer, Web Intelligence, SAP UI5, SAC.

Server 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. If you have entered the URL to the server, a green check mark indicates that a connection could be established. If another server is used later, the button next to the save button can be pressed and the server URL can be edited. The hyperlink *"Admin"* allows you to jump to the admin area of the graphomate server.	
Templates If the current settings are to be saved as a template, a new template name can be entered in the input field labeled *Create Template* and confirmed by clicking the *Save State* 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. With *Choose Template* templates stored on the server can be retrieved and applied. To do this, the desired template must only be selected and the *Apply* button must be pressed. If you want to delete a template, you have to select the template in the list and press the *Delete (bin symbol)* button. If changes have been made to the templates on the server side, you have to click on the *Refresh* button. Changes should then be visible.	

Editability

With the Editability function it is possible that certain cell areas of a graphomate matrix can be edited at runtime. For this setting you use the *Editabiltity Assignment.*

Editability Assignment Pop-Up

- *Editable*: This Boolean property allows to (de)activate the rule.
- *Filter (optional)*: A list of filter objects. Each filter object can restrict a dimension to certain members. Only data corresponding to the members specified for the dimensions selected in the filter will be editable.
- *Description (optional)*: Defines a description for the set configuration.

Default values

Here you will find the default values of the preset Scenarios. Copy the character string and paste it back into the *Dat a* tab in the relevant *Import/Export* area.

> ℹ **Scenarios (AC, FC, PP, BU):**
> W3sic2hvcnQiOiJBQyIsImNvbG9yIjoiIzIyMjIyMiIsImZpbGx0eXBlIjoiZmlsbGVkIiwic2hhcGUiOiJyZWN0IiwidG hpY2tuZXNzIjoxLCJiYXJ3aWR0aCI6MC40LCJwaW53aWR0aCI6MC4yNSwiZm9udHdlaWdodCI6Im5vcm1h bCJ9LHsic2hvcnQiOiJQUCIsImNvbG9yIjoiIzgwODA4MCIsImZpbGx0eXBlIjoiZmlsbGVkIiwic2hhcGUiOiJyaG 9tYiIsInRoaWNrbmVzcyI6MSwiYmFyd2lkdGgiOjAuNCwicGlud2lkdGgiOjAuMjUsImZvbnR3ZWlnaHQiOiJub 3JtYWwifSx7InNob3J0IjoiQlUiLCJjb2xvciI6IiMwMDAwMDAiLCJmaWxsdHlwZSI6ImVtcHR5Iiwic2hhcGUiOiJja XJjbGUiLCJ0aGlja25lc3MiOjEsImJhcndpZHRoIjowLjQsInBpbndpZHRoIjowLjI1LCJmb250d2VpZ2h0Ijoibm9y bWFsIn0seyJzaG9ydCI6IkZDIiwiY29sb3IiOiJMDAwMDAwIiwiZmlsbHR5cGUiOiJoYXRjaGVkVXAiLCJzaGFw ZSI6InJob21iIiwidGhpY2tuZXNzIjoxLCJiYXJ3aWR0aCI6MC40LCJwaW53aWR0aCI6MC4yNSwiZm9udHdla WdodCI6Im5vcm1hbCJ9XQ==

Known Issues (martix)

- The performance of the virtual scrolling technology is negatively influenced by browser extensions that react to changes in the HTML structure. We have noticed this, for example, with ad blockers or some extensions to enlarge thumbnails.
- Setting the scaling using scaling groups does not result in equal scaling between the graphomate charts and the graphomate matrix.
- Tableau
  - If errors occur when visualizing background bar charts or deviation charts in the matrix, the "Reload" option will help.
- Lumira Designer
  - The Property *Header Text Align* has no effect at design time, but is applied correctly in runtime.

Known Issues (SAC)

- SAP has not yet released the data binding via the SDK of SAC, which is why a short script for data binding at runtime is required. See *Quickstart*.