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# Release guide

M.App Enterprise 2023 Update 6

Version 16.12.0

3 December 2024

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## About this release

This document describes the enhancements for M.App Enterprise 2023. The information in this document is current as of the product release. For the most current version, visit the [Support Portal](#).

This release includes fixes and enhancements to M.App Enterprise 2023. For information on product fixes, please review the “Issues resolved” section. For information on enhancements, read the “New technology” section.

This document is only an overview and does not provide every detail about M.App Enterprise’s capabilities. For additional information about M.App Enterprise, please read our [online help](#) and other product [documentation](#).

### **!! Change in the Version schema!!**

**From now on major version will be increased with the first number and the minor version will be increased with the second number. This means M.App Enterprise Updates will be 16.9, 16.10 and so on and the M.App Enterprise Major versions will be 17.0, 18.0 and so on. With this change the last number will be Patch Release, where bug fixes only will be included.**

## New platforms: M.App Enterprise 2023 Update 6

### Microsoft Windows® Server 2025

Windows® Server 2025 is now also officially supported in M.App Enterprise. Test cycle was successfully completed since the official release of the server OS beginning of October 2024.

## New platforms: M.App Enterprise 2023 Update 3

### Java 21

This major version of Java is now also officially supported in M.App Enterprise. Test cycle was successfully completed since the official release of the software mid of September 2023.

## **New platforms: M.App Enterprise 2023**

### **.NET Framework 4.8**

Among other things we upgraded the .NET framework to version 4.8 because of the latest security standards like TLS 1.3.

### **Microsoft Windows® Server 2022**

Windows® Server 2022 is now also officially supported in M.App Enterprise. Test cycle was successfully completed since the official release of the server OS beginning of October 2021.

### **Microsoft Windows® 11**

Windows® 11 is now also officially supported in M.App Enterprise. Test cycle was successfully completed since the official release of the server OS beginning of October 2021.

### **Java 18**

This major version of Java is now also officially supported in M.App Enterprise. Test cycle was successfully completed since the official release of the software mid of April 2022.



# New technology: M.App Enterprise 2023 Update 6

Detailed information about every new feature can be found on our documentation website:  
<https://mae.hexagon.com>

## Browser Printing

With this update of M.App Enterprise we are introducing Printing in Browser Applications. Because on the browser side we are doing a different approach than on the Desktop side, **Print Layouts** are kept in the different section in the MAE Studio.

Browser Print layouts are based on HTML / CSS / JS. Examples and templates can be found on our website.

There are steps to follow to see your defined template in the browser application:

1. Upload your HTML file in Browser -> Print Layouts
2. Add your Print Layout(s) to the MapView
3. Define a default one – except when you just have one
4. Start Browser Application
5. Click on the Print icon in the menu
6. A preview will open, where you can choose the Print Layout
  - a. Only applicable when having more than one
7. Click “Print” to start the browser print dialog box
8. Click “Print” to print your template



## MAE goes Container

Docker is a platform that allows developers to build, ship, and run applications in lightweight, portable containers. Containers bundle an application and its dependencies into a single package, ensuring consistent behavior across development, testing, and production environments. Docker provides tools to create, manage, and orchestrate these containers, making it easier to deploy and scale applications.

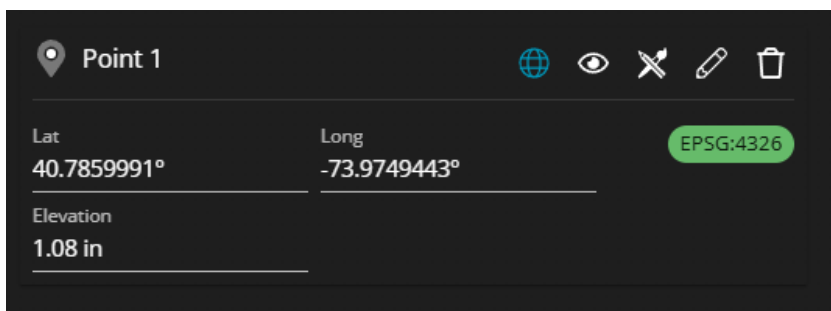
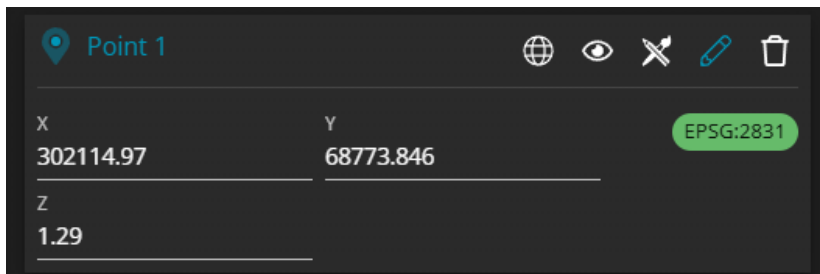
Windows Containers are a specific type of container designed to run on Windows systems. They work similarly to Linux containers but leverage Windows technologies to isolate and manage applications. Windows Containers can run natively on Windows Server or Windows 10/11, supporting .NET applications and other Windows-based workloads. They are essential for modernizing Windows applications and integrating them into containerized environments.

With this M.App Enterprise release we are happy to announce the support of Windows Container on Docker.

## Browser Measurement Improvements v2

The next iteration of improvements coming to Browser Measurement in this update of M.App Enterprise. The following items are included:

- EPSG definition of Point Measurement within the MapView form
  - Showing the EPSG code in the Point Measurement result panel
- Change of precision within the Measurement panel in the Browser Applications
- Improved design / layout of Measurement results

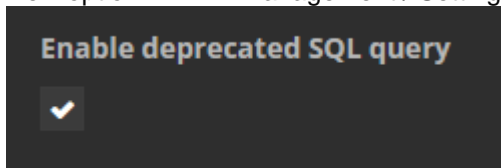


# New technology: M.App Enterprise 2023 Update 5

## Universal Queries

Due to security concerns we upgraded the QueryAPI for Browser applications. This means several things:

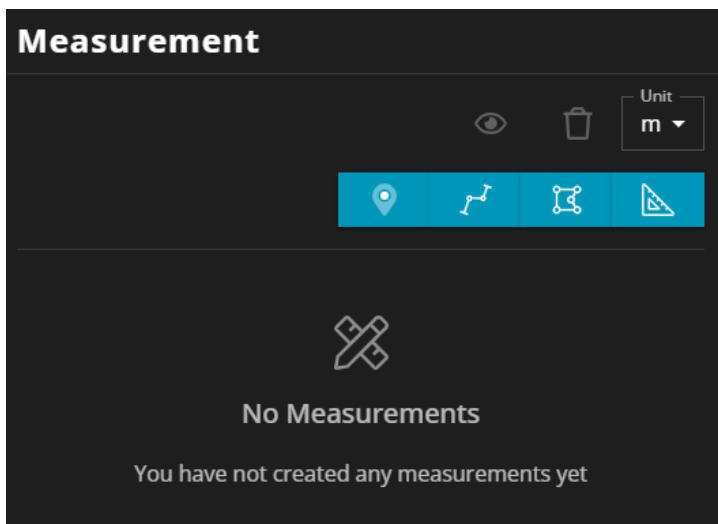
- Queries moved from Desktop/Queries to Content/Queries
- New option in MAE Management / Settings:



- New code snippet to use for your Browser Application. You can find it MAE interface / Execute Query
  - o Change the name to the query name
  - o Defining additional parameters (see MAE documentation platform for more information)

## Browser Measurement improvements

There are several improvements throughout this feature introduced in M.App Enterprise 2023 Update 2. The following screenshots give you more ideas of the changes. Detailed description can be found at <https://mae.hexagon.com>



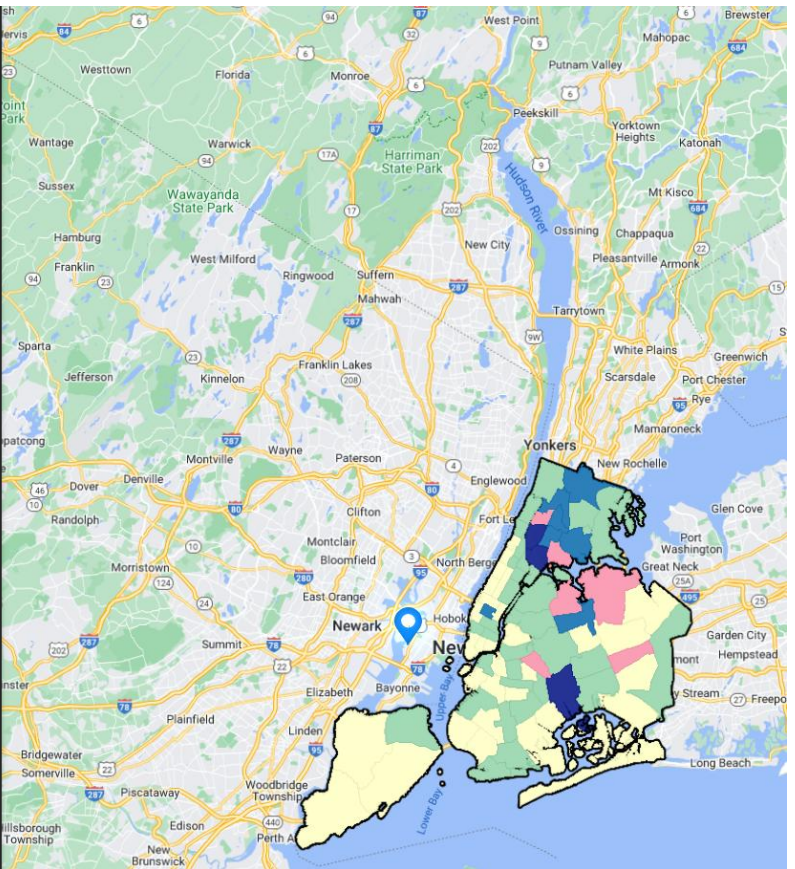
### Measurement

Unit  
m

📍
📏
📐
📏

Point 1

X: 1326262.323  
Y: -4655947.261  
Z: 4138644.711




### Measurement

Unit  
m

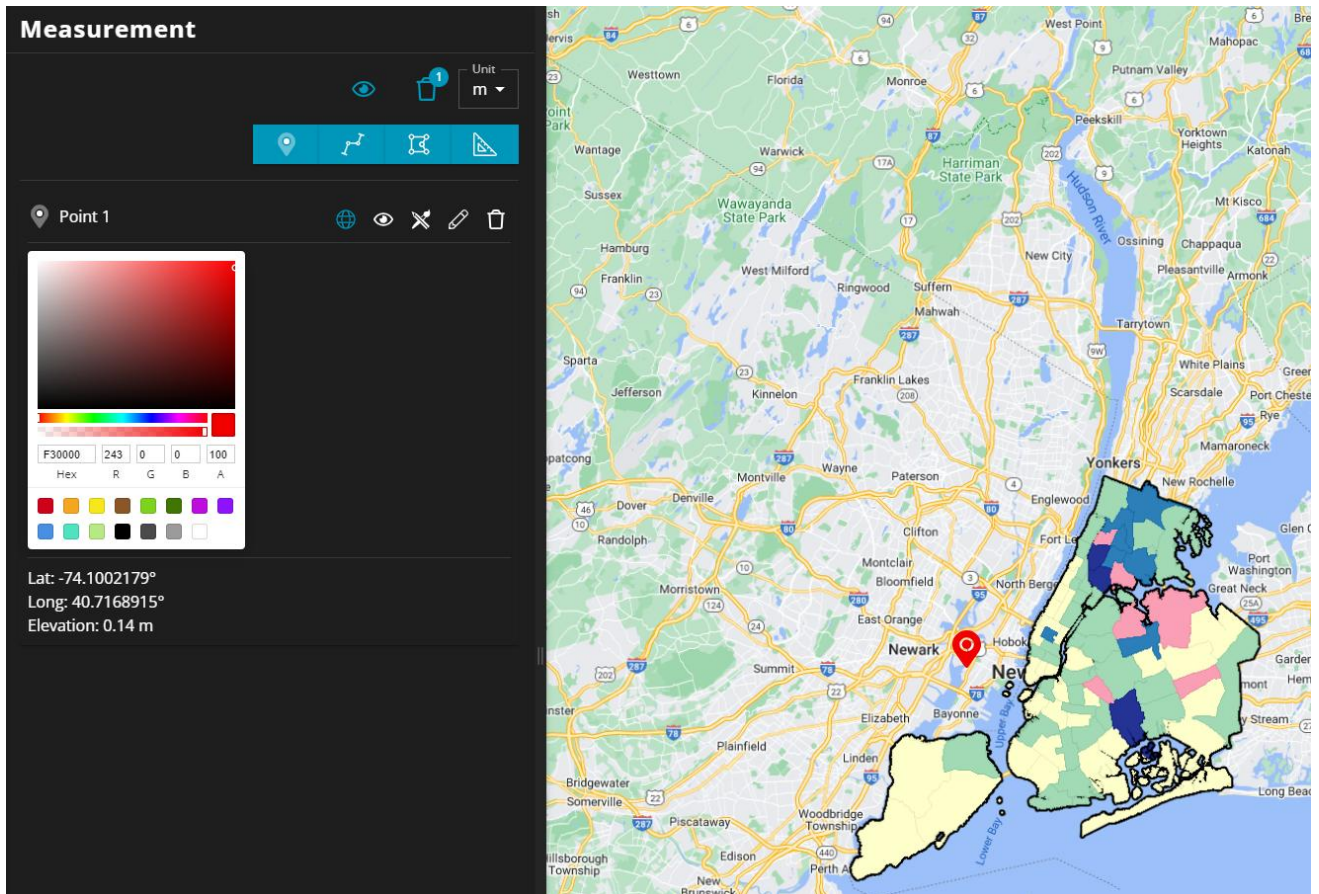
📍
📏
📐
📏

Distance 1

Distance: 67.25 m  
Height: 37.80 m  
Length: 55.63 m







## SHA-512 password encryption

With this release of M.App Enterprise we are increasing the security of password encryption for M.App Enterprise. Instead of SHA-1 we are now encrypting everything with SHA-512.

## Automatic backup of Web.config and application-fusion.production.yml

In previous versions of M.App Enterprise you lost some of the changes you've made in the web.config for MAE / application-fusion.production.yml for LuciadFusion – e.g. SSL information. With this release we do a backup of both files so you won't lose any precious information when upgrading to the next version of MAE.

## WFS 2.0 support (read-only)

With this release we support the reading of WFS 2.0. WFS coming from M.App Enterprise are still in version 1.1.0

## Community ideas

### New column in Vector Data / Attribute Data

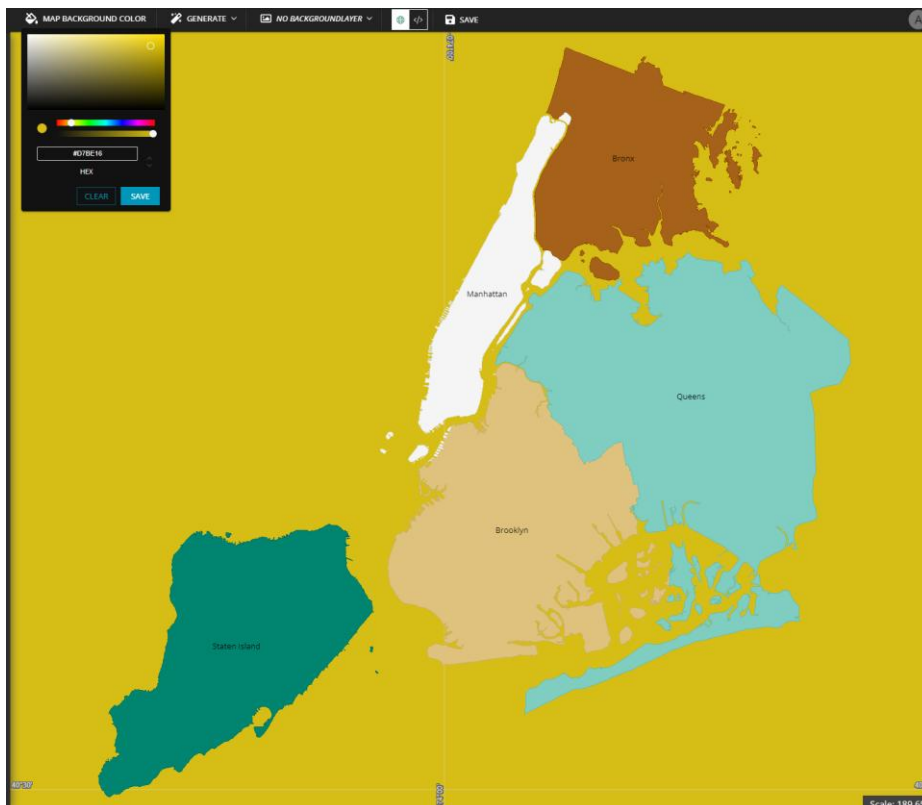
In this update of M.App Enterprise we offer the additional possibility to filter based on the database name for two lists (Vector Data and Attribute data), which allows you to get a more granular filter of all your imported data.

### Subelements Workflows / ActionSet without an icon

In previous M.App Enterprise versions workflows always got an icon – a default < / > if you didn't define it by yourself. With this update – if you don't use any icon it is possible to show only the label / text of the Workflow.

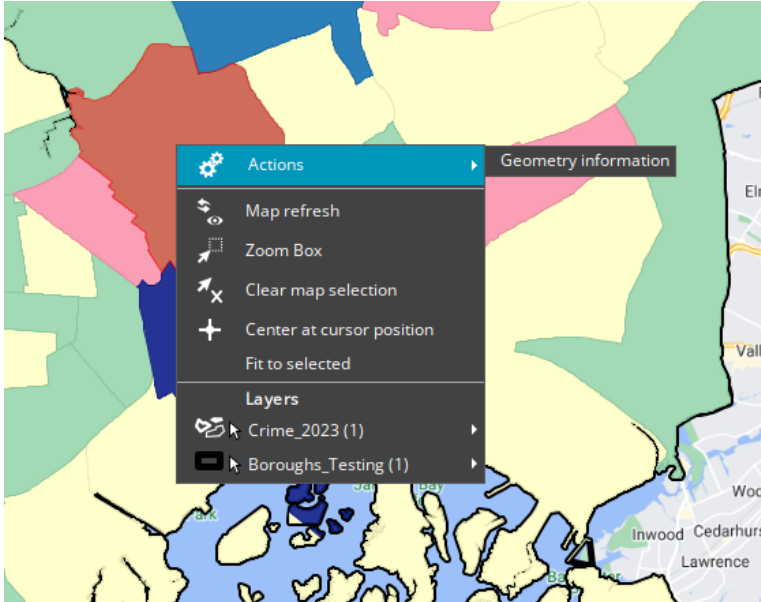
### Make map's plain background color customizable

M.App Enterprise 2023 Update 4 offers the possibility to change the background color for your map. You can find it in the Style Editor, which means you have to add this specific styleset at the Desktop / Browser App in order to see it.



## Show geometry information (x,y,z)

In the new Map context menu – introduced in M.App Enterprise 2023 (16.8.0) there is a new functionality called **Show geometry information** in the category **Actions**



Geometry information	
Key	Value
ID	62
MBR left	306,323.48
MBR top	63,137.62
MBR right	312,496.38
MBR bottom	57,267.3
Type	MultiPolygon
Number of coordinates	1233
Area	19,556,603.34
Perimeter	23,099.6

Geometry information X

General		Coordinates	Attributes	
#	X	Y	Z	M
1	312,174.117	59,944.885	-	-
2	312,227.210	59,872.877	-	-
3	312,281.534	59,809.401	-	-
4	312,350.029	59,734.231	-	-
5	312,359.356	59,724.199	-	-
6	312,367.024	59,710.857	-	-
7	312,377.871	59,692.697	-	-
8	312,451.420	59,569.750	-	-
9	312,496.383	59,497.943	-	-
10	312,486.227	59,486.162	-	-
11	312,238.943	59,521.369	-	-
12	312,229.504	59,522.712	-	-
13	312,229.365	59,455.584	-	-
14	312,228.946	59,439.268	-	-
15	312,228.952	59,439.176	-	-
16	312,143.816	59,438.472	-	-
17	312,087.063	59,424.123	-	-
18	312,086.753	59,345.834	-	-
19	312,061.272	59,357.078	-	-
20	311,984.457	59,345.571	-	-
21	311,941.748	59,355.840	-	-
22	311,973.556	59,540.823	-	-
23	311,983.843	59,557.354	-	-
24	311,964.260	59,554.417	-	-
25	311,946.323	59,562.998	-	-

Geometry information X

General		Coordinates	Attributes
Key	Value		
id	62		
robbery	226		



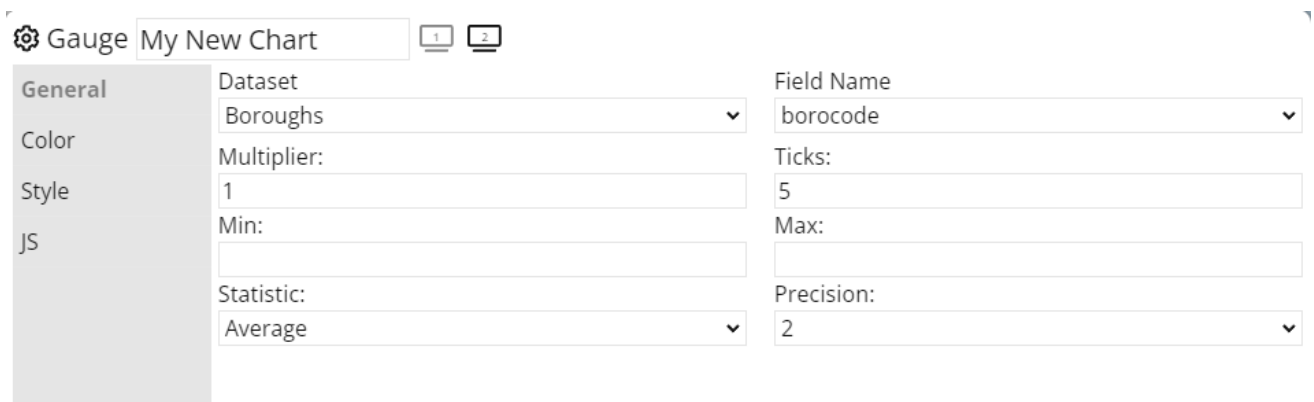
Add a button to download existing layout file (\*.mepl)

When a print layout is created and uploaded to M.App Enterprise Studio until this release there was no possibility to download it again in order to change it again in the PrintLayout Editor.

Define the decimal places for “mean”, “median”,... in Dashboard

There are additional precision options for Number Display Charts and Gauge Charts in this update.

Gauge Chart:



Gauge My New Chart

General

Dataset: Boroughs

Field Name: borocode

Multiplier: 1

Ticks: 5

Min:

Max:

Statistic: Average

Precision: 2

Number Display Chart:

Precision can be defined with “:xx” where xx is the number of precision:

Examples: Display Custom Legend Insert

```

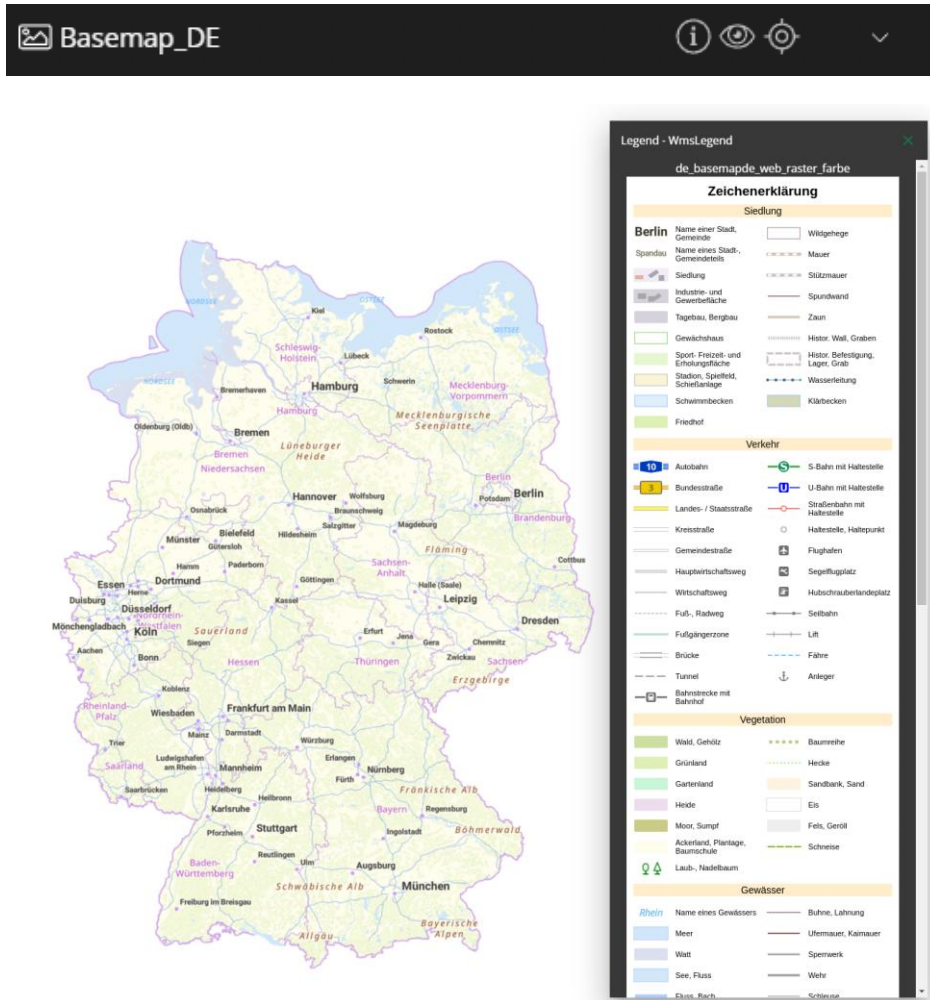
1 <div style="content-align: center; align-items: center; display: flex; grid-template-ro
2 <div style="text-align: center; width: 100%;">
3 <span style="font-wight: bold; color: #2dc26b; font-size: 46pt;">
4 <strong>%filteredCount:3</strong>
5 </span><br />Count
6 </div>
7 </div>

```

Here the “default” number display chart gets defined with 3 decimal places instead of the default 2.

## Legend to display information about a WMS in a map

With this release you can show the LegendGraphic in the Browser Application. Prerequisite – the WMS server has to offer such a capability



The screenshot shows a web map application interface. On the left, a map of Germany is displayed with various geographical features and city names. On the right, a legend window titled "Legend - WmsLegend" is open, showing a "Zeichenerklärung" (Legend) for the "de\_basemapde\_web\_raster\_farbe" WMS. The legend is organized into several categories:

- Siedlung (Settlement):** Includes symbols for Berlin (city name, city, district), Spandau (city name, district), and various types of buildings and structures like industrial areas, agriculture, and sports fields.
- Verkehr (Transportation):** Lists symbols for roads (Autobahn, Bundesstraße, etc.), railways (S-Bahn, U-Bahn, etc.), and other infrastructure like bridges and tunnels.
- Vegetation:** Shows symbols for different types of vegetation such as forests, meadows, and agricultural land.
- Gewässer (Water Bodies):** Lists symbols for rivers, lakes, and seas.

Initially the graphic pops up at the Legend Tree but can be moved to your liking.

# New technology: M.App Enterprise 2023 Update 4

## Import / Export Wizard for tenants

The biggest new feature in this M.App Enterprise release is the possibility of exporting existing tenants and importing them wherever necessary.

This means that you can export your tenant from any supported database provider (PostgreSQL, MS SQLServer, Oracle, SAP Hana) and import it to a different but still supported database provider e.g. export PostgreSQL and import in Oracle.

**Note: Only the tenant metadata tables get exported / imported. The spatial data in the background which is used in your tenant(s) doesn't get affected at all.**

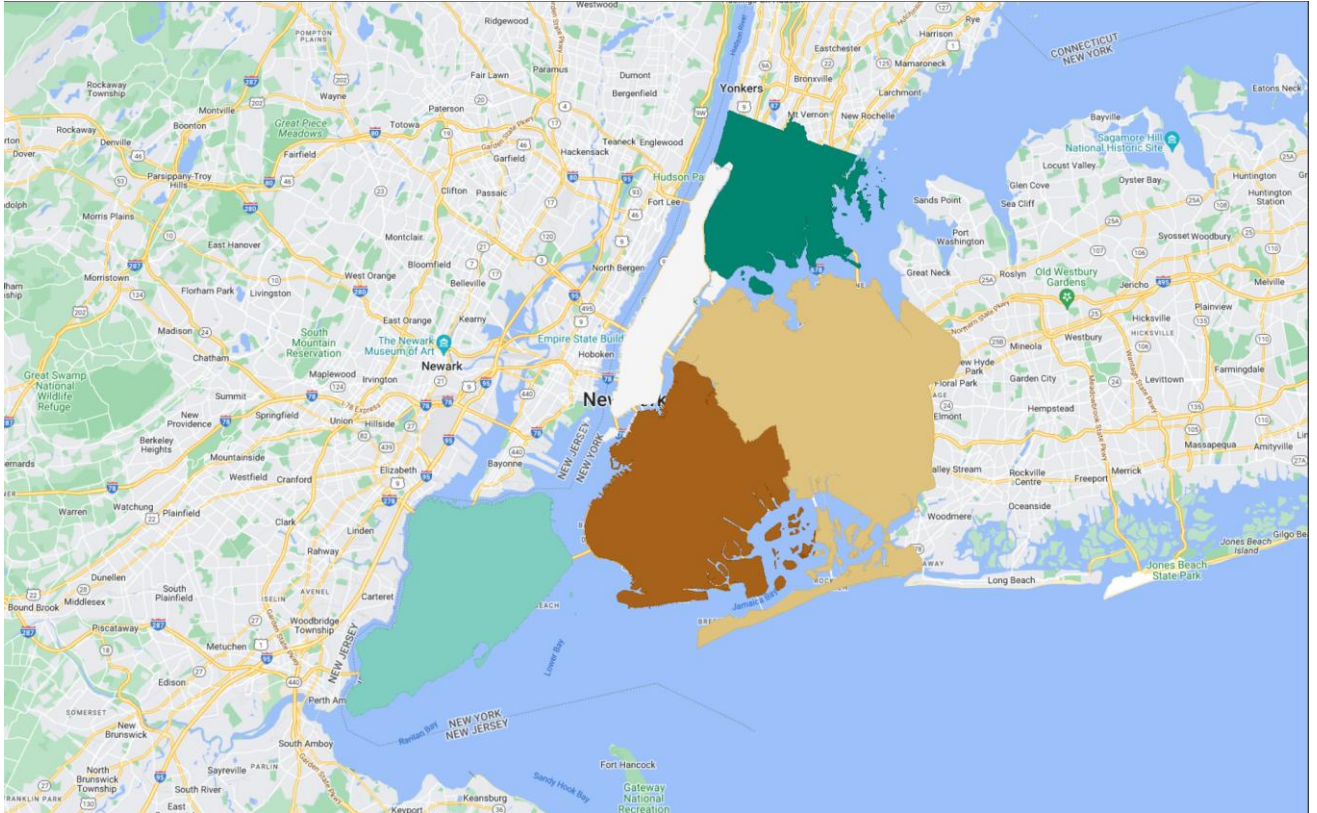
1. Export your tenant from the M.App Enterprise Management. To get the zip file you have to click on the export button in the tenant list
2. Create an empty database in the desired database provider
3. Select the zip file and "upload" it to the empty database created in step 2
4. Change some settings, if needed (MyGeoservices, Imagery, Vector Data, 3D Data)
5. Follow the wizard until the last step and click on "Save"
6. Now you have the imported tenant and you can use everything you've set up before in the "new" environment

**Note: If you have CACHED data in your tenant, you have to manually publish the data again.**

The full tutorial can be found on our documentation website.

## Google Maps integration

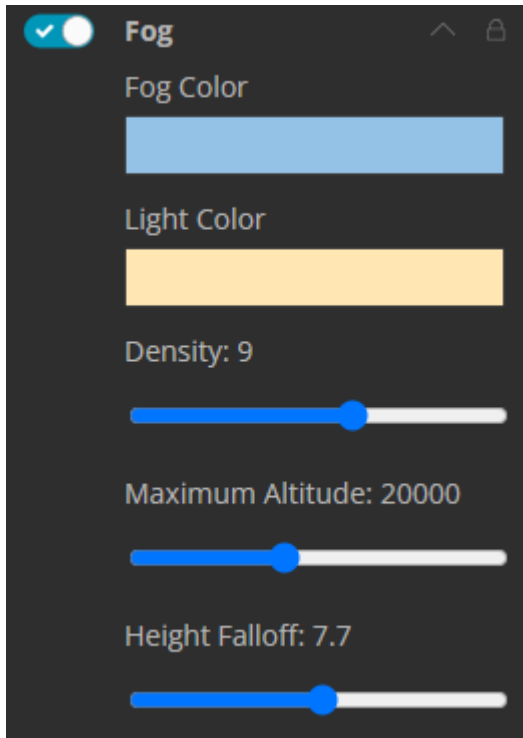
In this release you will get the possibility to add Google Maps as a background layer for your applications.



**Note: Only 2D Google Maps layers are supported in this update release.**

## New effect (Fog) for Browser Maps

With the release of M.App Enterprise 2023 Update 4 you get a new effect for your browser applications.



For more information have a look at [here](#).

Additionally, effects are only activated when using a 3D map. In the 2D map context every effect is per default disabled.



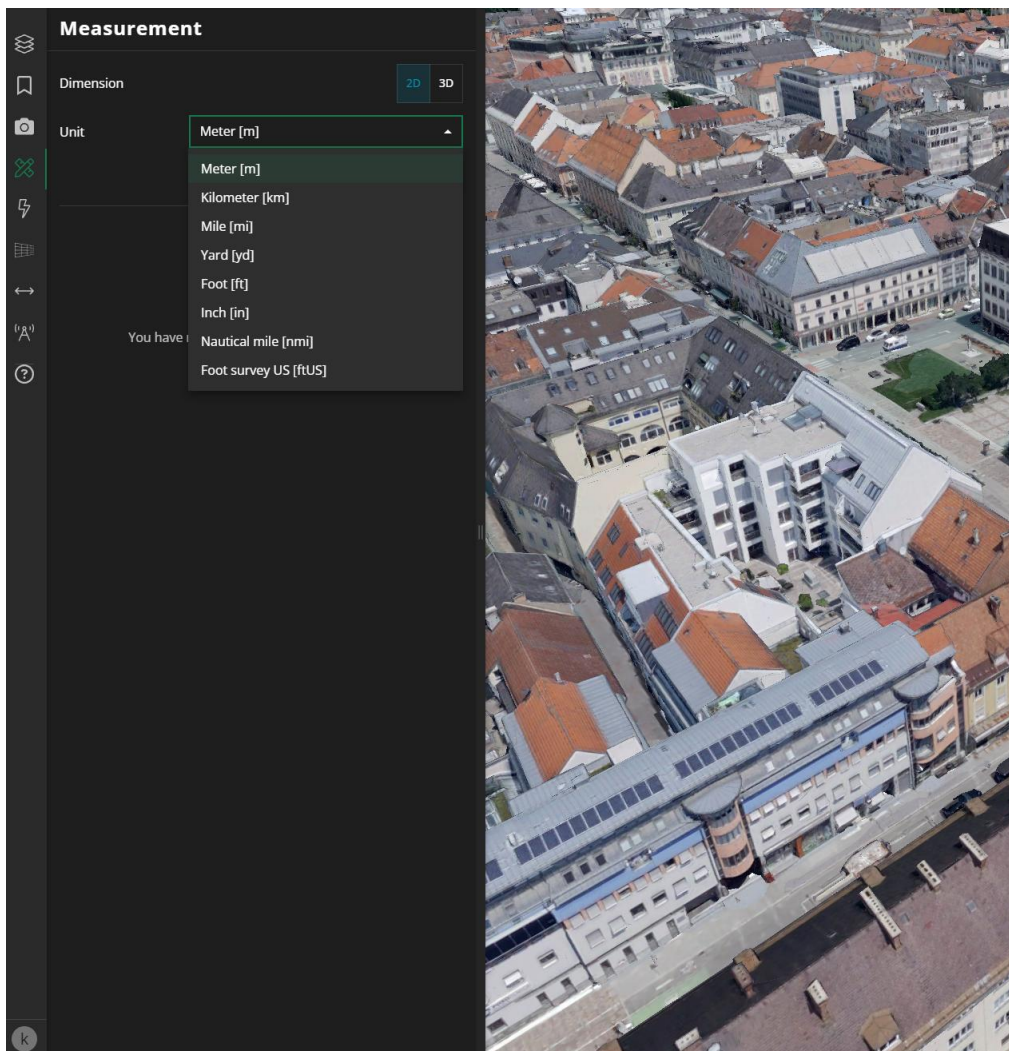
## Community ideas

As always, we looked at the ideation board, took some ideas from there and implemented them into the core platform of M.App Enterprise. For the release of M.App Enterprise 2023 Update 4 the following ideas were picked:

- New UOM for Browser Maps
- Desktop App - Ability to turn off map bounds warning message
- Support of multiple WMS layers
- Change tab for second page placement in MAE Dashboards

## New Unit of Measurement (UOM) for Browser Maps

In this release you get a new unit of measurement namely kilometer when you are activating the “Measurement” action.

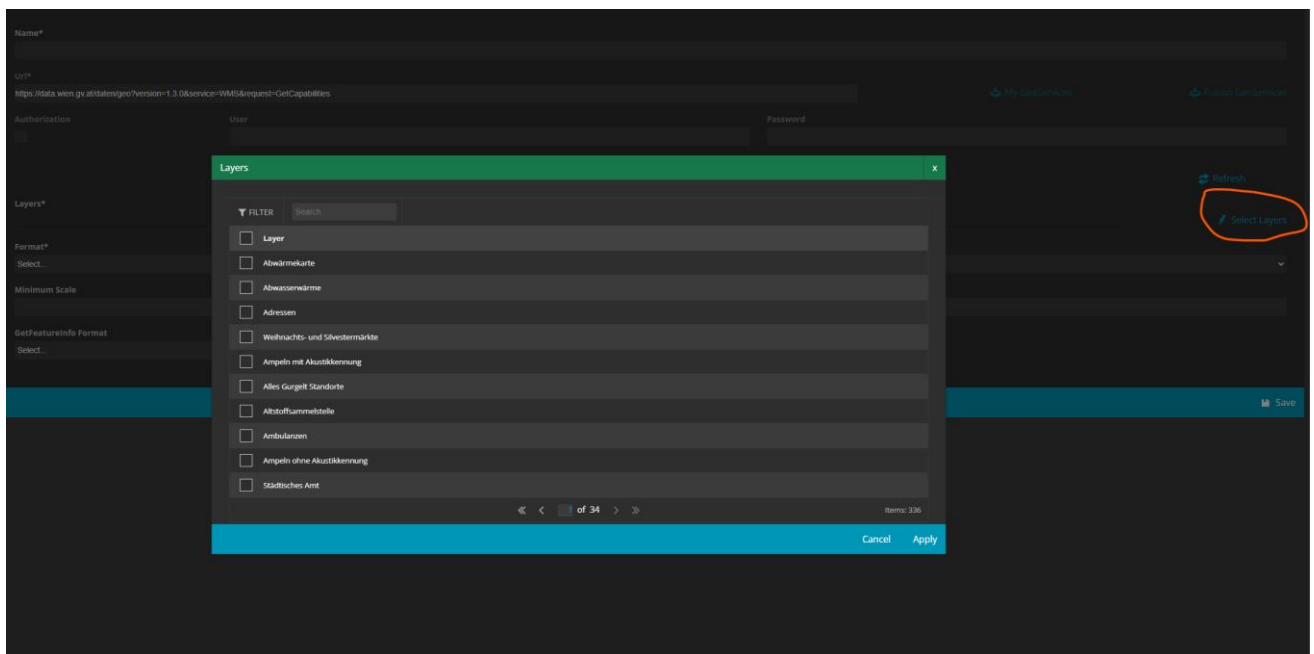


## Desktop App – Ability to turn off map bounds warning message

In this release there will be no map bounds warning messages any longer as a popup notification in the desktop client. Instead nothing is shown, but you still have the possibility to see them in the DEV console of the client (pressing F12).

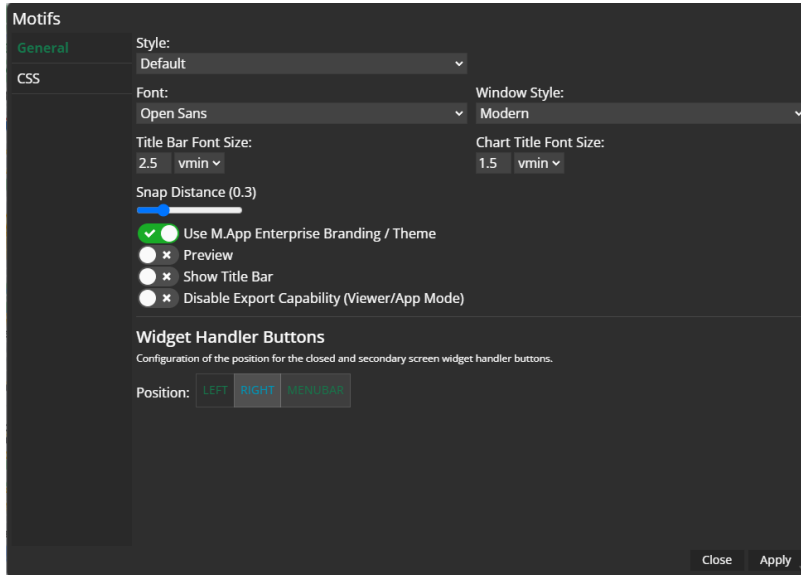
## Support of multiple WMS layers

You are allowed to add more than one layer to your / external WMS, which lightens the time in setting up GeoServices for your application. With the click on “Select Layers” you will get a modal form, where you can select your desired layers for this specific GeoService.



## Change tab for second page placement in MAE Dashboards

With this release of M.App Enterprise you can now switch between different locations of your “hidden” / “second-screen” widgets. Go to the “Motifs” Widget in Dashboard and you will see the **Widget Handler Button**, which allows you to position it to your likings.



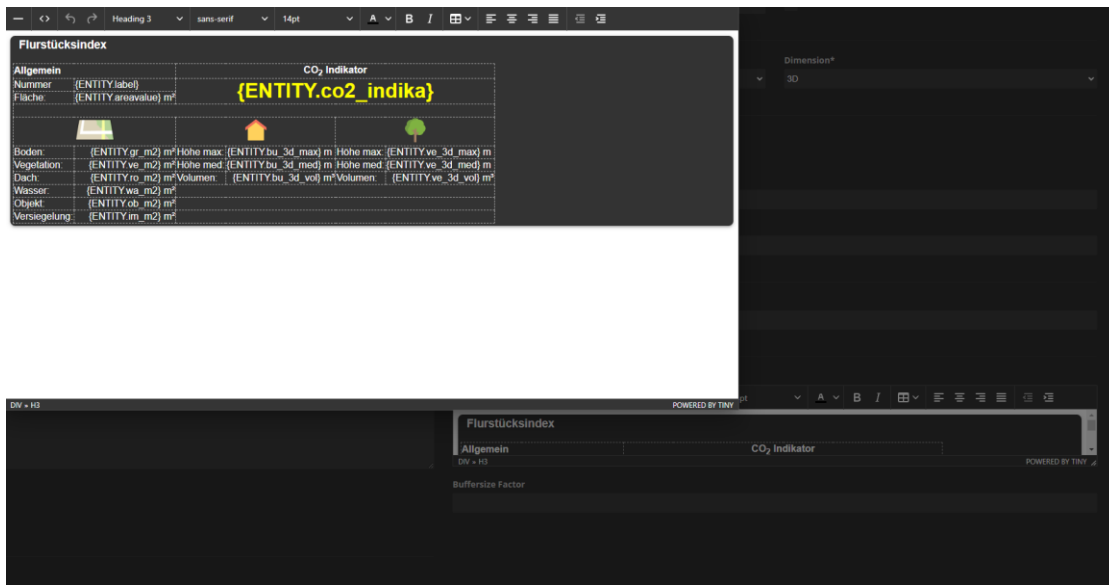
**Note:** The settings don't override your settings from the MapView, which means you have to ensure everything is set up correctly.



# New technology: M.App Enterprise 2023 Update 3

## Tooltips harmonization

With this update of M.App Enterprise it is possible to re-use your defined tooltips for Vector layers within the M.App Enterprise Dashboard.



Screenshot MAE Studio with definition of tooltip



Screenshot Dashboard Application

## Attribute data usable

If you have attribute data in your database – data without a geometry – you have the possibility to use this within the M.App Enterprise Dashboard.

### Dataset Configuration

Dataset Name:

Local File
M.App Enterprise
Online Source
External Service
No Data

Mode: Attribute Data ▾

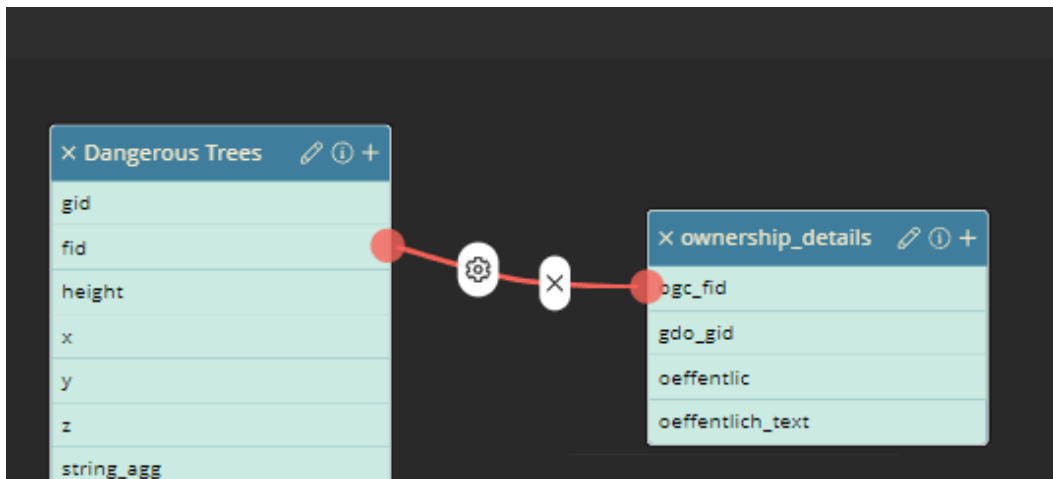
Data set: ownership\_details ▾

Update Interval (seconds):

Websocket Url:

Automatic Data Field Formatting

Close Connect

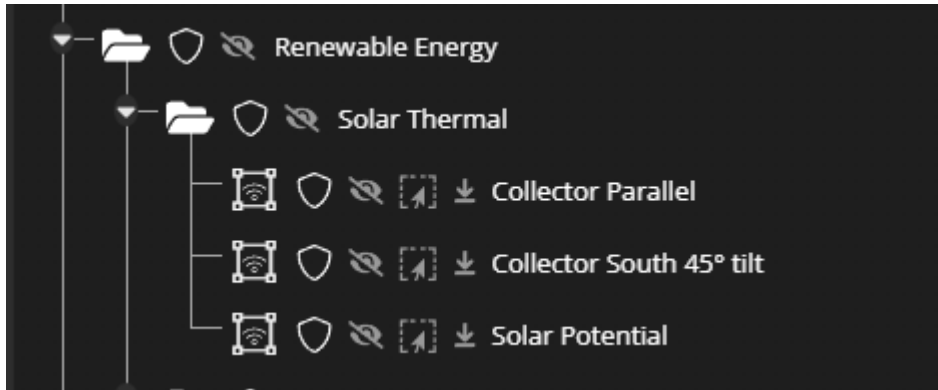


join\_tooltip **Dangerous Trees** ✕

crown_radi	gdo_gid	oeffentlich_text
2	72457	private

## Set Active Layer at the start of the application.

With this release it is possible to define one layer in your legend to be active at the start of the application. This means you can start your workflow or show the tooltip automatically without first going to the **Layer tree** and doing stuff there.



**Please note:** Only Vector layer are eligible to be **Active**.

## Community ideas

As always, we looked at the ideation board, took some ideas from there and implemented them into the core platform of M.App Enterprise. For the release of M.App Enterprise 2023 Update 3 the following ideas were picked:

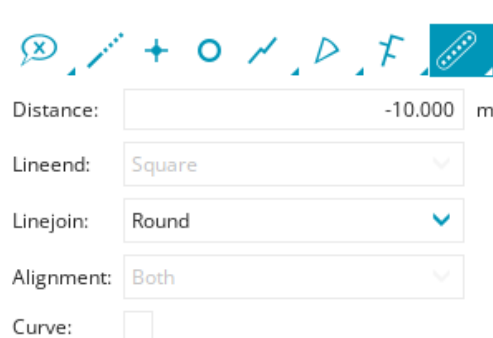
- Duration of display for tooltip in M.App Desktop application
- Negative Buffer zone in Rich Client App
- Browser Map Tooltip Improvement
- Possibility to add own quotes to Studio login page
- Box zoom button in Browser Applications

### Duration of display for tooltips in M.App Enterprise Desktop Applications

If you don't move the mouse in the Desktop Application the tooltip stays on the map.

### Negative buffer zone in Rich Client

You can define negative buffer zones within your **Construction Aid** in the M.App Enterprise Desktop applications.



### Browser Map Tooltip improvement

A detailed description can be found [here](#).

### Possibility to add own quotes to Studio login page

You will find in this release a new section in **Security -> Quotes** where you can add your own quotes to show for the login pages. The default ones will be overwritten and only your custom ones are available for display (alphabetically descending author name).

### Box zoom Button in Browser Applications

With this release it is possible to “draw” a rectangle in your map and zoom to this extent. You will find it underneath the – button.



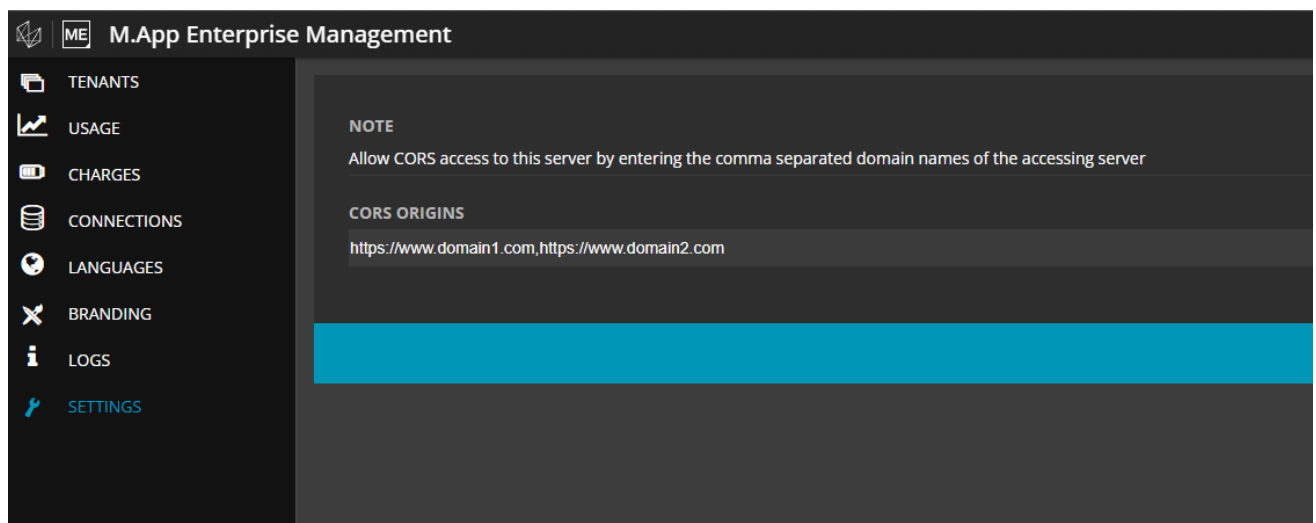
# New technology: M.App Enterprise 2023 Update 2

## Coordinate system framework

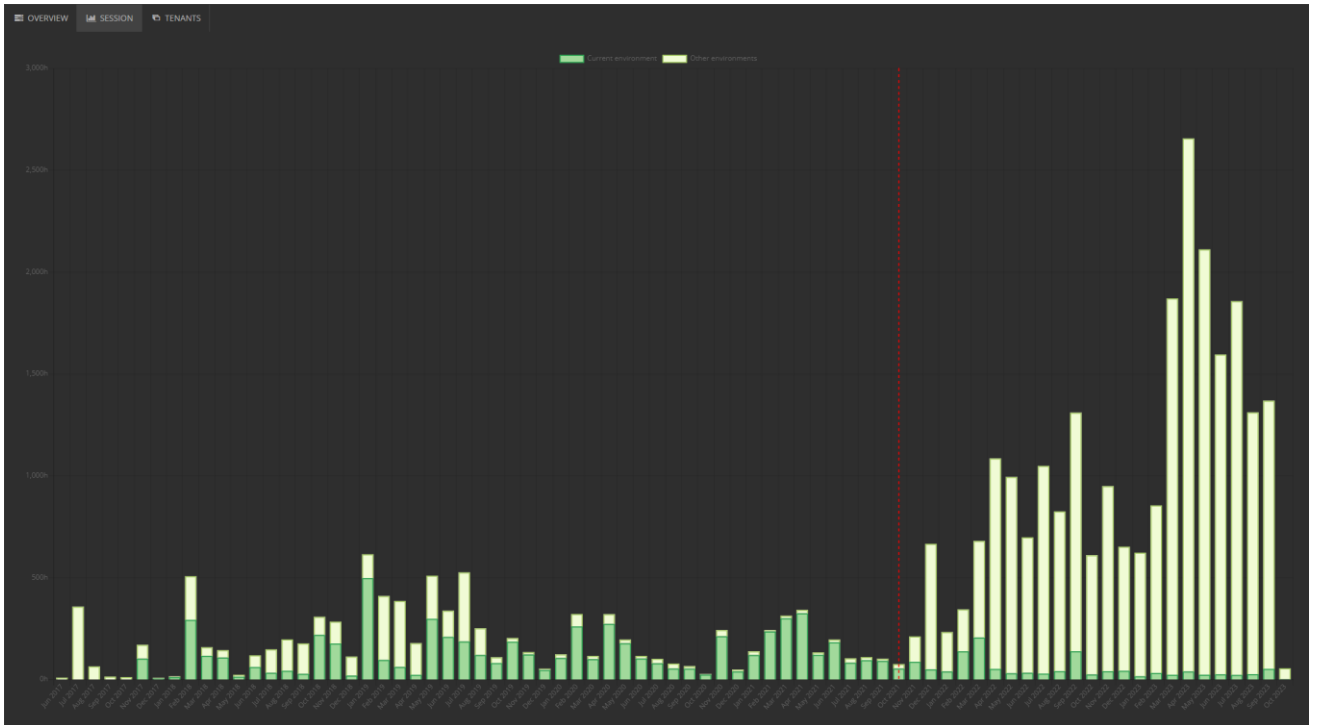
In the background the coordinate system framework was changed for this and all upcoming M.App Enterprise releases. That brings unification of the handling of coordinates throughout all components of M.App Enterprise (except everything handled via IMAGERY).

## CORS is editable

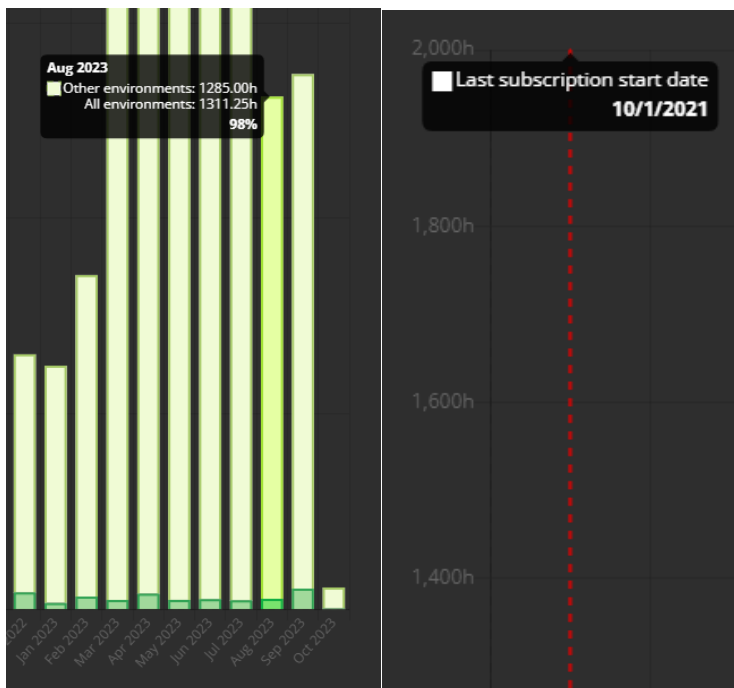
In the Management of M.App Enterprise you will find a new entry on the left hand side called **Settings**. In there you can define all servers (comma separated), which are allowed to access e.g. GeoServices from the application server or if you want to use the browser application in your iFrame.



## Improvements for Usage visualization in Management



With the release of M.App Enterprise 2023 Update 2 you will get a better overview in the Usage visualization. There is a red vertical line, which indicates when you've uploaded the last charge and as a tooltip you will get the date of that. Secondly you get now per bar, which equals the month, the information about how many hours the license was used on this and on other environments with a percentage value =>  $(\text{thisENV}/\text{otherENV}) * 100$



## Dimensioning / Redline elements in bookmarks (only Desktop)

With the release of M.App Enterprise 2023 Update 2 it is possible to store **Redline / Dimensioning** elements in the Bookmarks of the Desktop Application and to share it with other Desktop application users.

**New bookmark** ✕

Name of bookmark

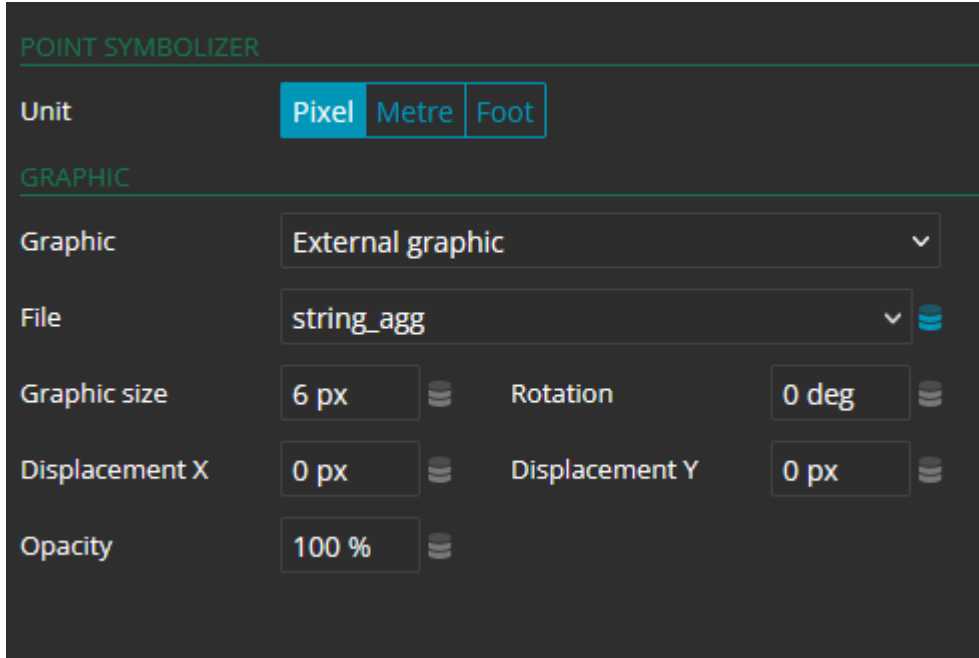
Description of bookmark

<input type="checkbox"/> Visible layers	<input type="checkbox"/> Active layer
<input checked="" type="checkbox"/> Center of the map	<input checked="" type="checkbox"/> Scale
<input type="checkbox"/> Opacity	<input checked="" type="checkbox"/> Styleset
<input type="checkbox"/> Display order	<input type="checkbox"/> Dimension
<input type="checkbox"/> Measure	<input type="checkbox"/> Redline



## External graphics from database (StyleEditor)

With the release of M.App Enterprise 2023 Update 2 it is possible to use external graphics from a database.






**POINT SYMBOLIZER**



Unit  Pixel  Metre  Foot


**GRAPHIC**

Graphic  ▾

File  ▾ 

Graphic size   Rotation  

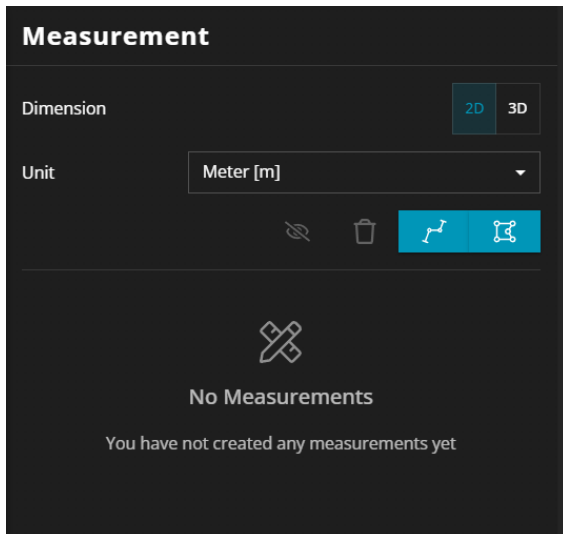
Displacement X   Displacement Y  

Opacity  

Here you have two possible ways to get your external graphics into the Style Editor / M.App Enterprise. Either the name of the SVG / PNG is stored in the column and you have the corresponding icons in the MAE Warehouse or you have the SVG / PNG stored as **base64** in your column.

Either way the same options are still available, which you get for your “normal” PointSymbolizer.

## Browser Measurement

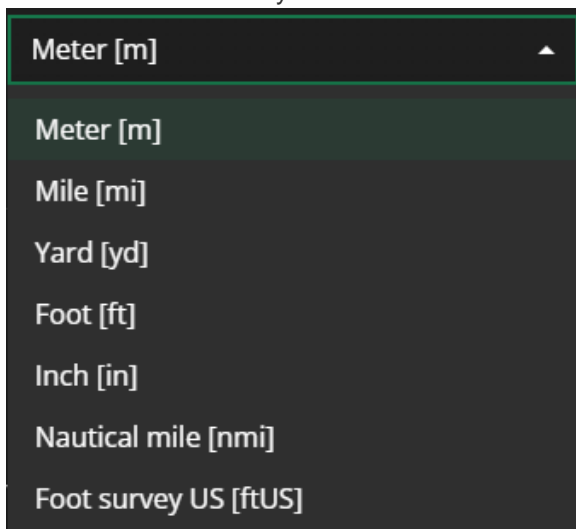


In this release Browser Measurement is completely rewritten and changes the usability of how to measure in the browser in the map entirely.

**Dimension** – Do you want the measurement to be in 2D or in 3D?

*Please note: If you change the dimension within your measurements the affected measurements get deleted!*

**Unit** – Which UOM do you want to use?



**2D measurement:**

**Hide icon** – Set the selected measurement on visible / invisible

**Delete icon** – Delete the selected measurement

**Path** – Start your line measurement

**Area** – Start your area measurement

**3D measurement:**

**Hide icon** – Set the selected measurement on visible / invisible

**Delete icon** – Delete the selected measurement

**Path** – Start your line measurement

**Area** – Start your area measurement

**Height** – Start your line measurement only possible along the z-axis

**Distance** – Start your line measurement only possible along the x/y axis

A final e.g. area measurement on a Mesh could look like this.



**Green** – Your line gets not occluded by anything

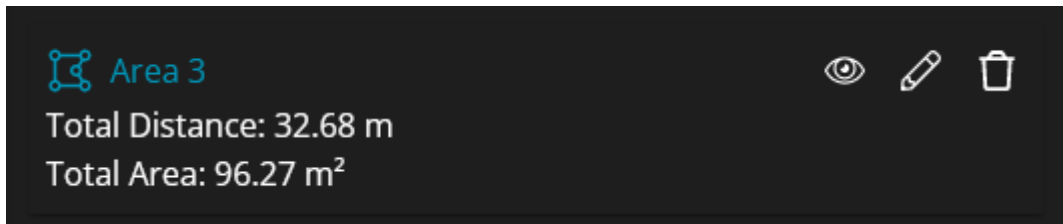
**Red** – Your line is occluded by something (uneven surface,...)

**Blue fill** – Your area measurement is on not occluded by anything

**Missing fill** – Your area measurement is occluded by something (uneven surface, roof structures,...)

**Label** – for all lines with a halobox + area label

On the right side you do see your measurement in a list



**Hide icon** – Set the selected measurement on visible / invisible

**Edit icon** – Edit the selected measurement

*Please note: As soon as you click the Edit icon you can either move the vertices or the middle point of the line(s). With ALT or CTRL or SHIFT + LMB click you can delete the desired vertex. You can delete all but three vertices for an area measurement. Highlighted measurement is yellow.*

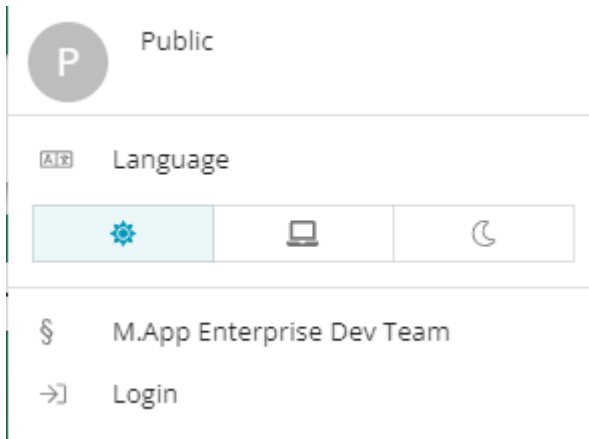
**Delete icon** – Delete the selected measurement

## Support multiple Active Directory on-premise domains

If you have defined more than one on-premise Active Directory domain in your M.App Enterprise installation with this M.App Enterprise version you have the possibility to select your desired one from a drop-down list.

## Public user language switch

With the latest release of M.App Enterprise it is possible to switch the language of Public users the same way as the on-premise user. The same regulations are working now for both kinds of user for M.App Enterprise.



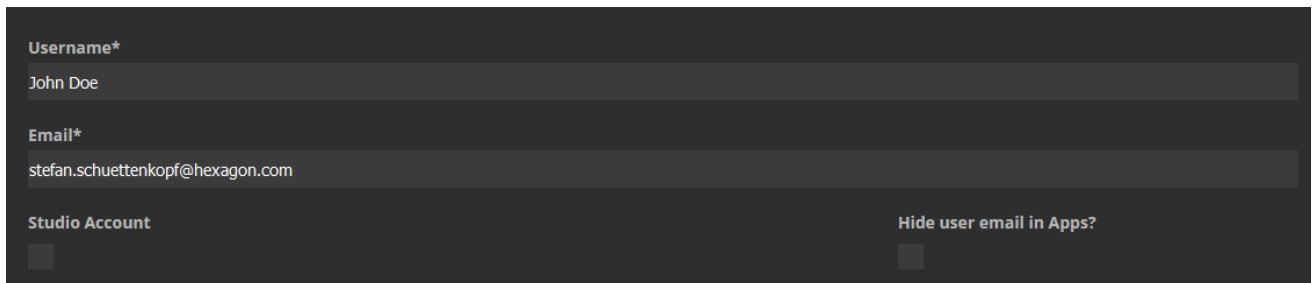
## Community ideas

As always, we looked at the ideation board, took some ideas from there and implemented them into the core platform of M.App Enterprise. For the release of M.App Enterprise 2023 Update 2 the following ideas were picked:

- Hide email address
- Printlayouts in alphabetical order
- Move the save Success Message popup when saving in the MAE Browser Portal editor to not cover the save button

### Hide email address

With the latest release of M.App Enterprise it is possible to hide the email address. This feature could be important if you must create many users and want to activate all by yourself, but don't want to show your email address in the user menu at the apps page or in the app itself.



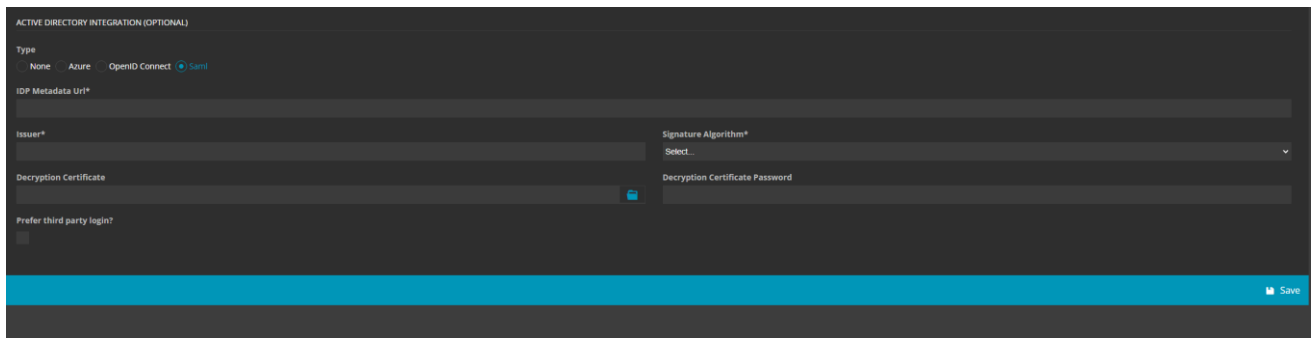
### Printlayouts in alphabetical order

All printlayouts in M.App Enterprise Studio (Desktop -> Print Layouts) as well the list in the Desktop client are now alphabetically sorted.

# New technology: M.App Enterprise 2023 Update 1

## SAML support

With this release we introduce another 3rd Party Provider called SAML (Security Assertion Markup Language). Below is a screenshot of all parameters you must set in order to get the connection with SAML up and running.



- IDP Metadata Url
- Issuer
- Signature Algorithm (RSA-SHA-512 or RSA-SHA-256)
- Decryption Certificate (optional file you have to upload)
- Decryption Certificate Password (optional – only needed if a certificate is uploaded)

## Layer ordering in Dashboard

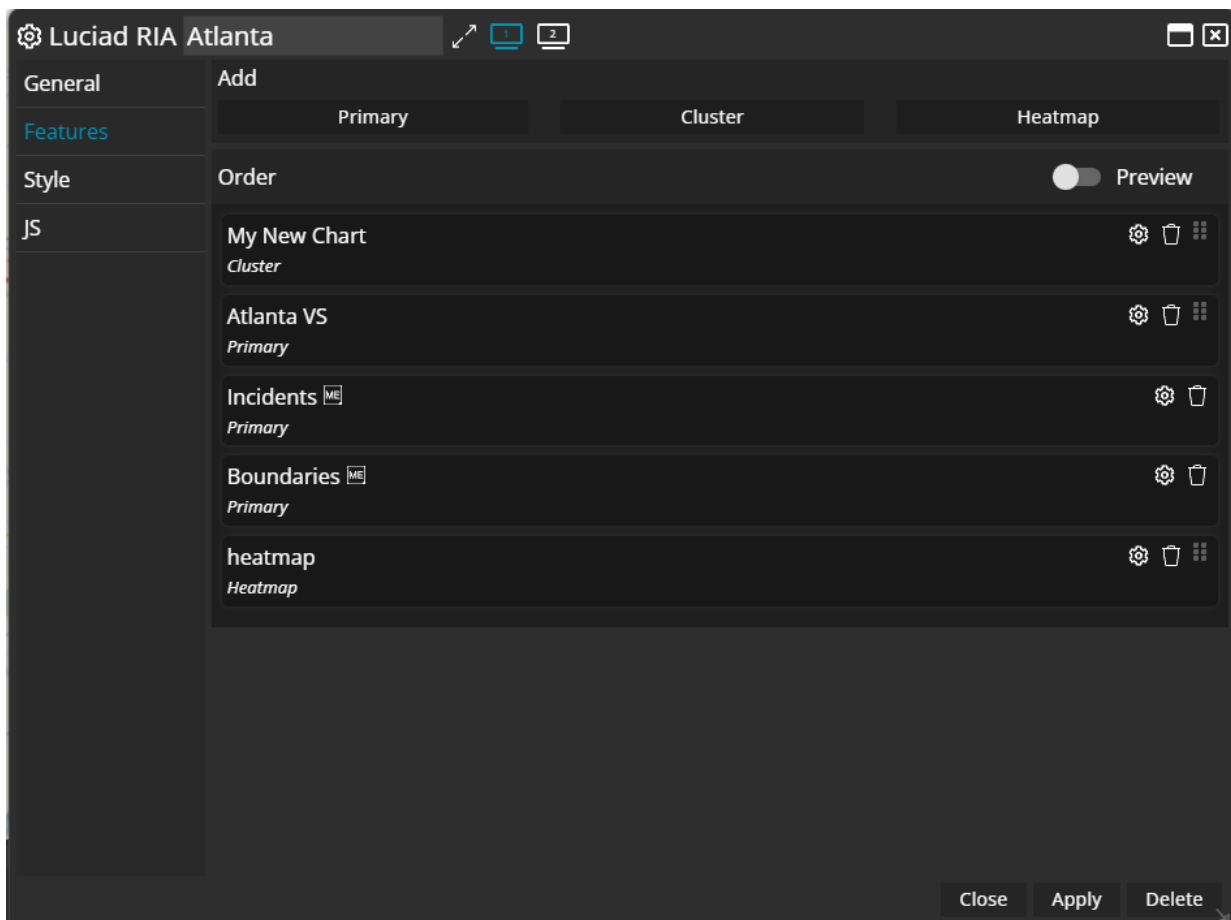
In this release we introduce the possibility to change the layer order in your Dashboard. This means you can rearrange all Dashboard layers to your liking. Layers coming from the MAE MapView can't be changed - to do that you have to change the order in the corresponding legend, which is assigned to the MapView you are using.

At first you must click the gear icon on your map widget in order to get to the settings of the widget. In there you switch to **Features** and there you have several options.

- Adding new Dashboard layers (Primary, Cluster, Heatmap). Only the location of these switched from the bottom of the widget screen to the top
- Order: In here you can change the layer order to your liking. As mentioned above layers coming from a M.App Enterprise MapView / legend can't be changed. These are marked with a small ME icon, and they turn red if you want to move them.

Ordering is happening with a simple drag and drop as you may know it from the tooltip section of Dashboard. For increasing the user experience furthermore, you can click on the **Preview** slider. This opens up automatically the legend tree and you can see your changes immediately.

Please note: Changes are only made when you click **Apply**. You will get a notification if you leave the window without saving = clicking **Apply**

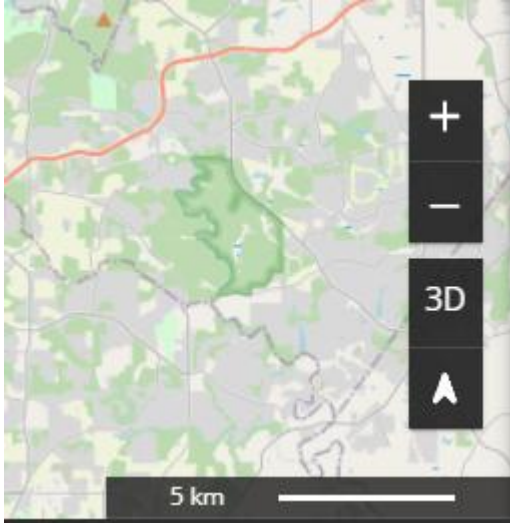




## Browser scale indicator

With the latest release in M.App Enterprise you will get a scale indicator at the right bottom of the map, where you get a feeling at what scale your map state is currently in.

Please note: It is the centre of the map on which the scale bar is calculated.



## ECWP streaming in Browser

In this release we completed the ECWP streaming capabilities in the browser applications. In GeoServices you had already the possibility to add ECWP as a new type and now the browser supports this service type. There are some things to do to get it up and running:

- Changes are necessary in the web.config. Current setup is that ECWP is per default disabled. You must uncomment the line(s) in the web.config and then you are good to go.
- If ECWP is enabled, you must ensure that the correct headers are set if you want to have the Apps / AppEngine in an iFrame. Because there are so many different options you could've set up your iFrame, we can't give you a generic recipe to be able to get everything up and running in your customized browser application framework.

## Layer Notification

With this release we introduce some notification icons in all drag-drop lists. For example, in the legend you get an icon for "invalid" (red icon) and "already-used" (secondary-colour mark) layers and it will look like this:



## Third-Party Logout

With this release we introduce the third 3rd Party Provider called SAML (see [SAML support](#) for more information). Beside of onPremise AD, Azure AD, openID connect you have now the possibility to get your information from SAML. And with the introduction of the new provider we also added a new functionality to the overall 3rd Party Provider behaviour namely that we get rid of the connection to the 3rd Party Provider, when logging out of M.App Enterprise. You have to login again if you want to use the provider again.

Please note: This only loosens the connection between MAE and the 3rd Party Provider. You will be fine in all other applications using the same provider.

## Throttle login attempts

With this new feature we limit the amount of login attempts within a certain time threshold. This means security for your system is increased against forced attacks.

# New technology: M.App Enterprise 2023

## General

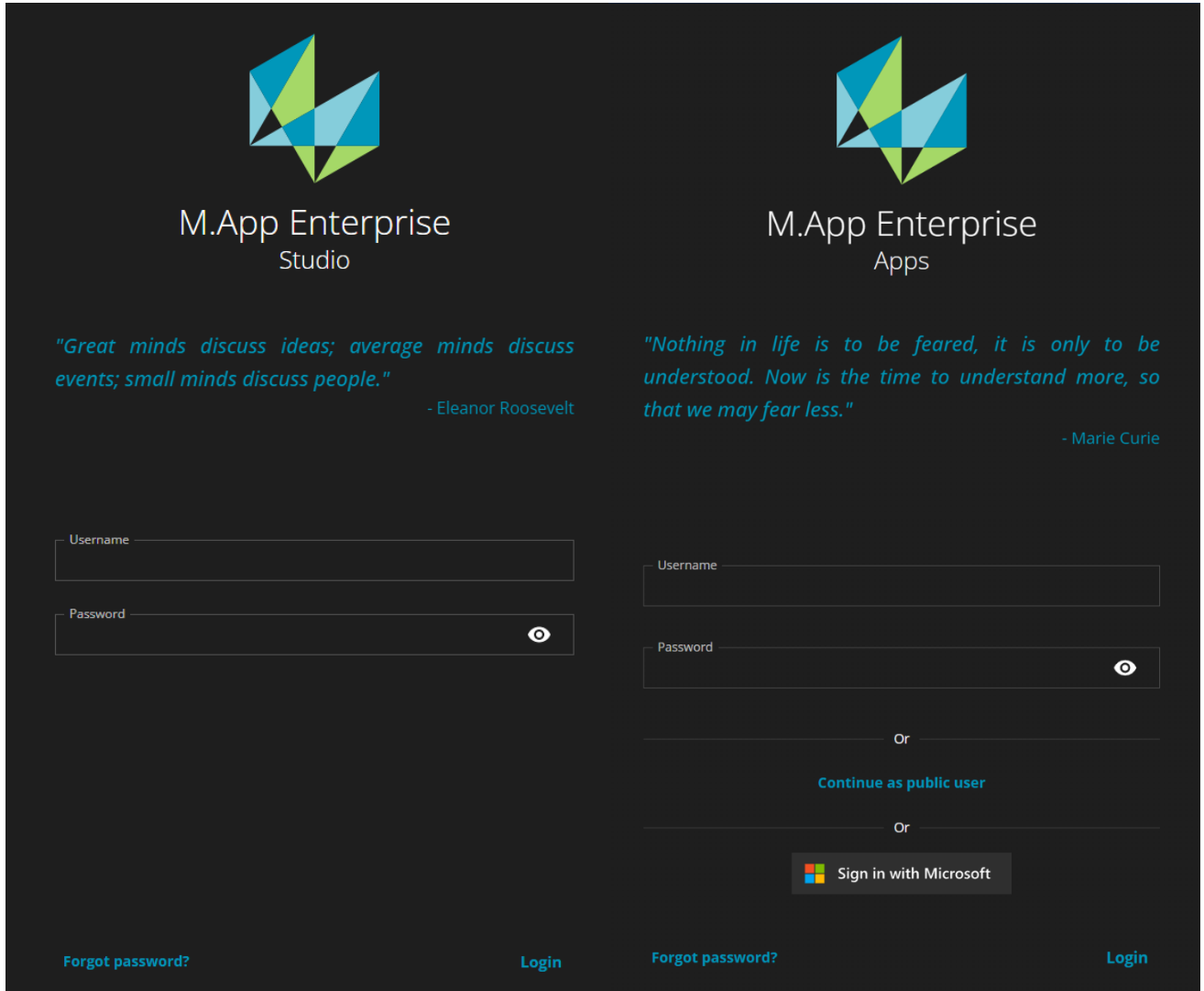
### Community ideas

As always, we looked at the ideation board, took some ideas from there and implemented them into the core platform of M.App Enterprise. For the release of M.App Enterprise 2023 the following ideas were picked:

- MAE Browser/Analyzer View: User defined date/time filtering (see [Date Widget Enhancements](#))
- Ability to clone apps in M.App Enterprise (see [Clone button](#))
- MAE Browser/Analyzer View: Re-add support for Tile Servers in RIA maps (see [Support of TMS](#))
- MAE Browser/Analyzer View: Re-add support for multi-selection tooltips in RIA maps
- Feature Analyzer: WMS GetFeatureInfo (available for all browser-based apps; see [GetFeatureInfo on WMS](#))
- Show thematic legend classes in map (see [Thematic legend entries](#))
- Option to add a legend to the Feature Analyzer M.App (see [Dashboard](#) and [Thematic legend entries](#))
- Configurable Legend Widget for browser applications (see [Thematic legend entries](#))
- Feature Analyzer - One-to-Many relationship support (see [Dashboard](#))
- M.App Enterprise Desktop: Fit to Layer (see [Fit to layer extents](#))
- Selection Style missing in Browser App (see [New code snippets](#))
- Style Editor: Background and scale (see [Style Editor improvements](#))
- Feature Analyzer: Ability to choose European notation in the "Number Display" Chart (see [Dashboard](#))
- Redesign user settings in M.App Enterprise Management/Studio and Apps page. (see [New user menu](#))
- Displaying measure values in cluster, not only feature count. (see [Dashboard](#))
- Feature Analyzer: Detects the current location of the user (see [Dashboard](#))
- Feature Analyzer: Change styling of Tooltip (see [Dashboard](#))
- Feature Analyzer: Measurement Tools (area, length, etc) (for drawing lines/polygons see [Dashboard](#))
- Thematic setup in M.App Enterprise (see [Style Editor improvements](#))
- Saving project area (lower/upper corner) (see [Clone button](#))
- Anonymous Role to access MAE-Apps (see [Support of Public Apps](#))
- Open Workflow-form via RIA map (see [ActionSets in browser](#))
- MAE – STUDIO: Option to duplicate entries across studio (see [Clone button](#))

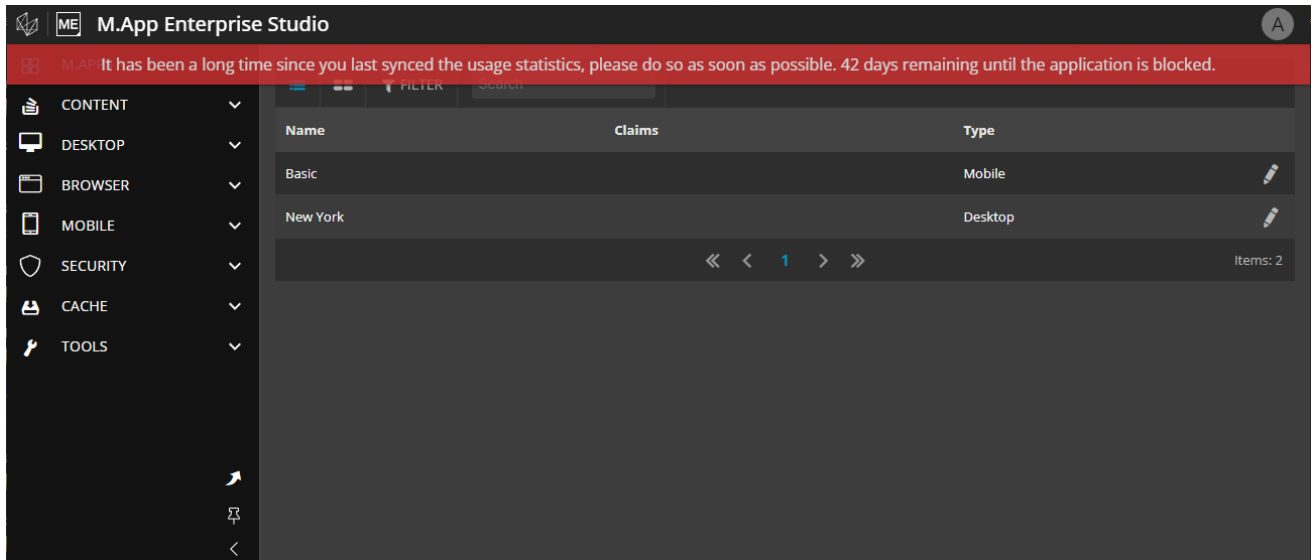
## New log-in page

When you first open the Management/Studio/Apps page after the upgrade to M.App Enterprise 2023, you will see the first big change in the design/layout of the new version, namely the login page, which got a complete overhaul in this major version of M.App Enterprise.



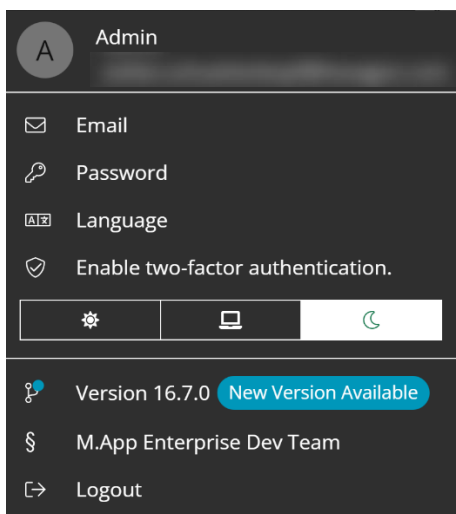
In addition to the quotes, which appear in a random order, you will also be allowed to log in as a public user, which gives you access to all browser and desktop-based applications without log-in credentials. See [Public Apps](#).

## New license warning banner



With the new release, we introduced a new license warning banner. If you move your mouse near the banner, it will disappear; otherwise it will be present. The banner gives you a better understanding of when your application will be blocked by showing your application's remaining days.

## New user menu



The new user menu got a complete overhaul from a design and functionality perspective. Initially, only the avatar/first letter of the username is visible. After you click on the avatar, the entire user menu opens underneath with an overlay window. Every available action now has an icon, including and the theme (dark, system or light) having icons instead of a drop-down list. The license information also switched from the outside to the inside of the user menu.

New information is also available to the user – especially for the Studio Administrator and the Management user. These “special” users can see the version of M.App Enterprise installed on the server and if a new version is available.

## Support of public apps

M.App Enterprise 2023 gives you the opportunity to create public apps. These public apps are available to everybody who accesses the “MyApps” page without any log-in credentials. In the App creation (Browser or Desktop) you will find the “**Public**” checkbox.

*Note: Mobile public apps are not supported.*

## Direct access to apps

If non-public apps/private apps are shared via a URL (button is on the “MyApps” page) and you are not logged in, when opening the URL, you will be redirected to the log-in page of M.App Enterprise, and as soon as you click the “**Login**” button, you will automatically get forwarded to the App itself.

## Improved theme support across all components

All branding (primary/secondary colors) and theming is unified across all components/clients. See [Desktop client enhancements](#).

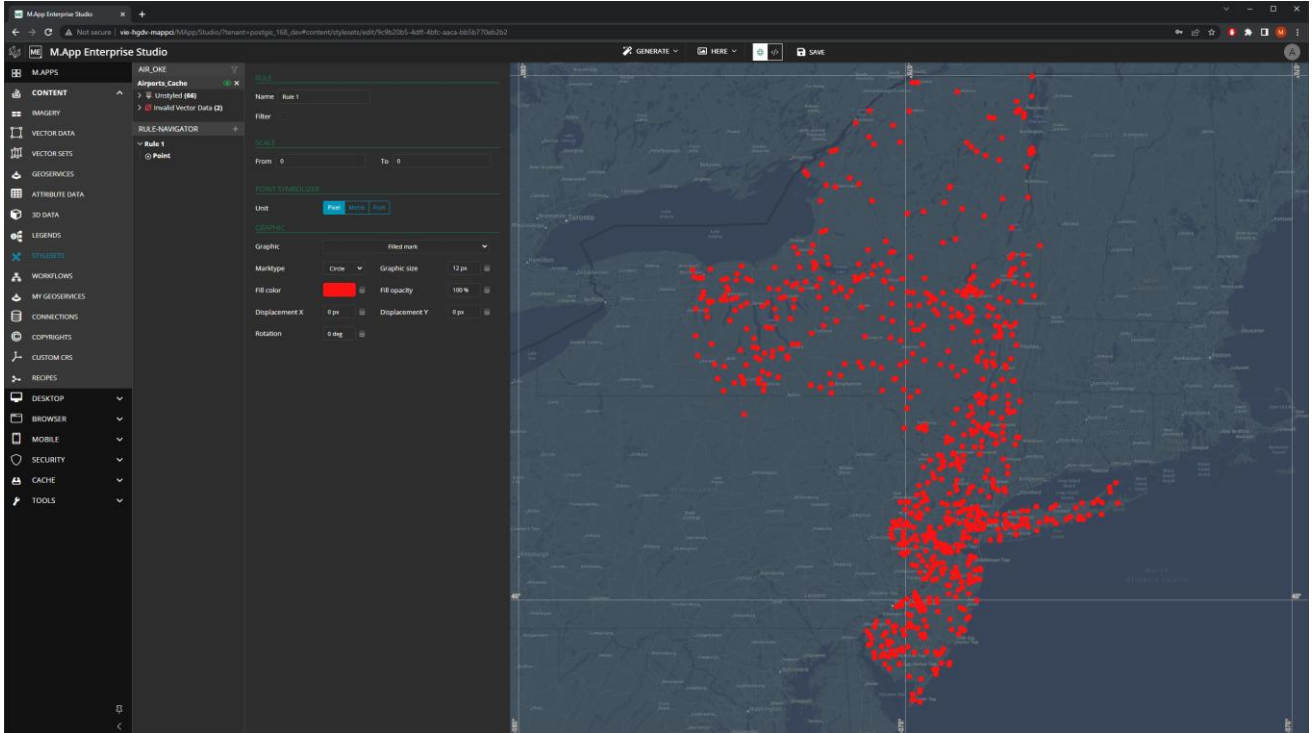
## New data format support

- HSPC: To add Hexagon Smart Point Clouds (HSPC) data to your (browser) app, you can add a code snippet to the JavaScript section of your browser app. The only thing you must change is the service endpoint coming from LuciadFusion.
- ECWP: To add ECW images to your app, you must create an ECWP service endpoint in LuciadFusion. Then you switch to “**Geoservices**” in M.App Enterprise Studio, select “ECWP” in the drop-down menu and select the corresponding service endpoint in “**FusionGeoservices**.”

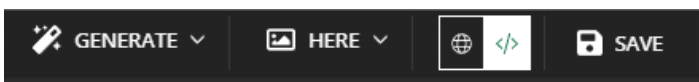
## Style editor improvements

There are several improvements for the style editor in this release. For example, it is now possible to add one **background layer** of your “GeoServices” list.

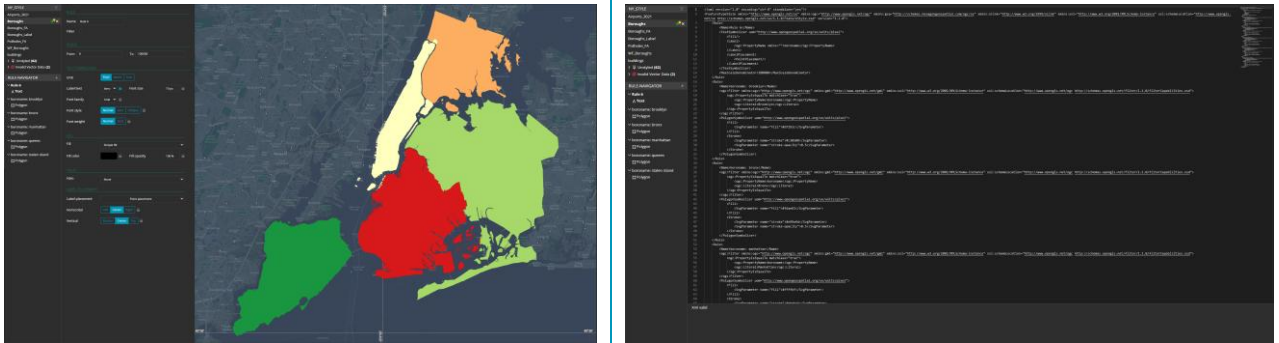
*Note: It is not possible to combine several of the available list.*



Because the layout/design is harmonized throughout the entire platform, “StyleEditor” is no longer a separate tab, but opens inside the M.App Enterprise Studio to increase usability. In addition, the header bar of style editor got flattened with new icons and a new switch between the Map/XML view.



Both views are always synced so a flawless change of the visual or programmatic approach is given.



You also get a validation of your XML, and if it fails you can undo your changes and go back to the last valid state.



## Studio

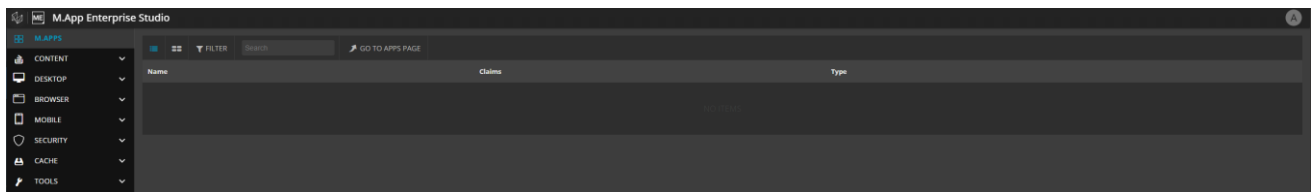
### New UI/UX in Studio

The most obvious change between previous versions of M.App Enterprise and the newest release is that the header bar has changed significantly.

#### Old:

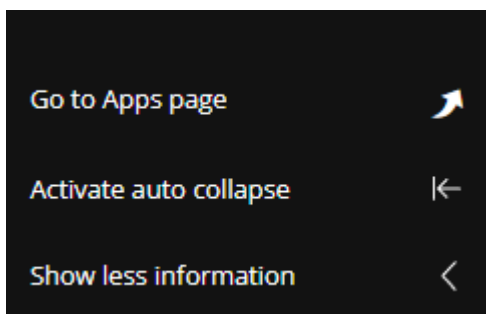


#### New:



The main categories switched from top to the left, and instead of clicking on the “main” category and the sub menus opening on the left side, the new UI opens every submenu underneath the “main” category. A new user menu is also introduced with this new version. See [New User Menu](#).

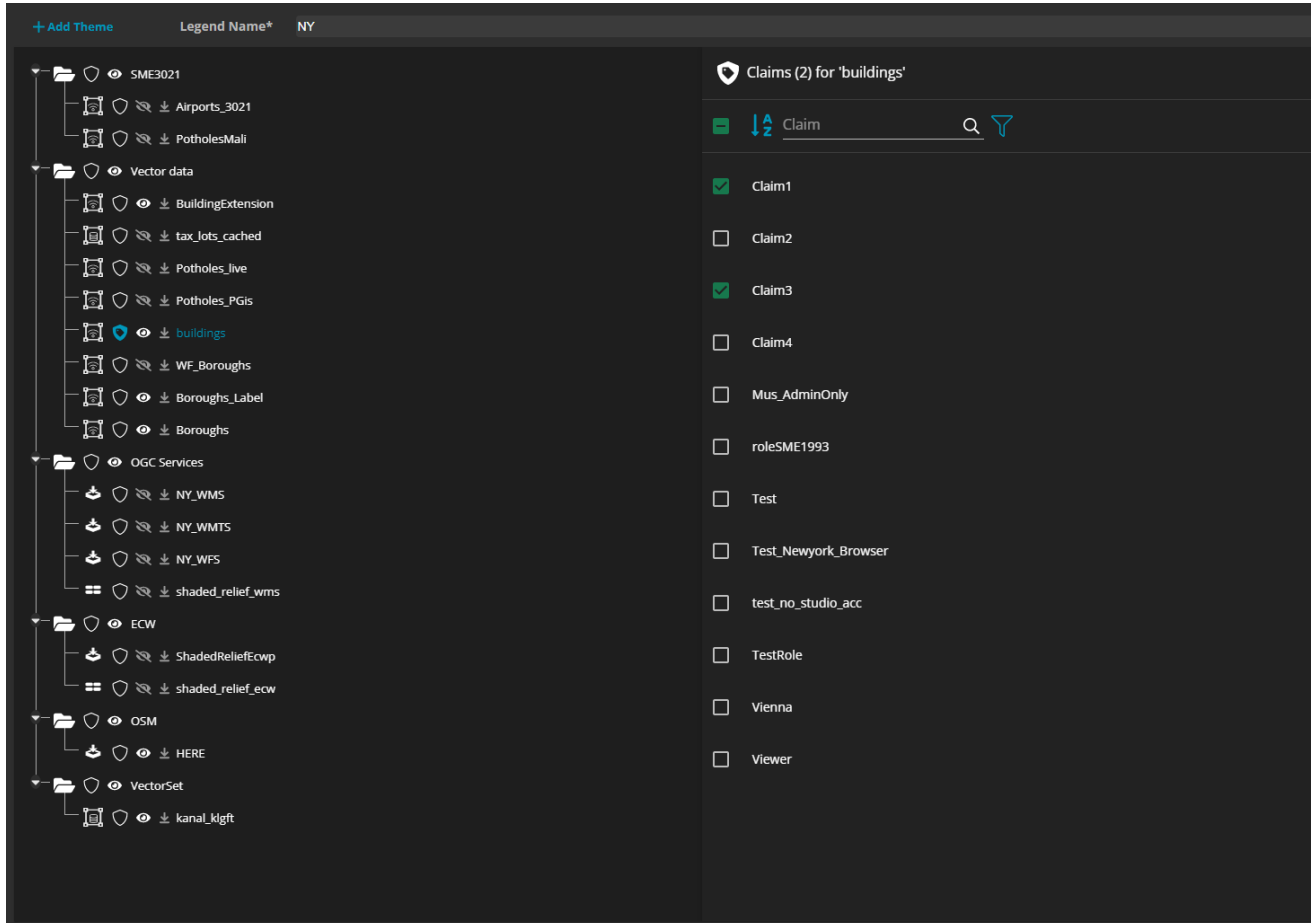
The newest release also offers the possibility of collapsing the user menu to the left. This gives you more space for your content and especially comes in handy when using the style editor in 16.8. Besides that, you can also pin the settings for your menu width and start the “My Apps Page” (See screenshot below.)



The overall user experience is improved and the number of clicks to get the same result is again reduced.

## Roles and Claims

In M.App Enterprise 16.8, “Claims” are introduced. Explained simply, they will replace “Roles,” but they have more power. Until now you had to create the same legend twice to hide one layer, which is an administrative effort. But with this release you can use the same legend and set a claim for this one specific legend entry.



Besides layers in legends, the claims are also available for:

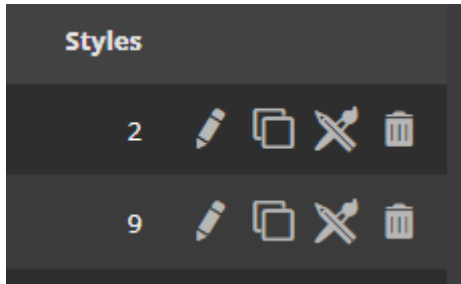
- Actions
- Mobile elements (fields, menu items)

## Support for TMS

One of the most requested features from the ideation board is accessing any Tile, Map, Service (TMS). So, in 16.8, if you provide the URL and any necessary subdomains to the TMS, you can use it in all the clients and as a background layer in the style editor.

## Clone button

This feature also came from the ideation board and allows the studio administrator to copy and paste existing style sets without starting from scratch every time.



The following parts within the M.App Enterprise Studio can be cloned:

- Legends
- StyleSets
- Workflows
- Action Sets (Desktop and browser)
- Dashboard
- Browser Map Views
- Browser M.Apps
- Desktop M.Apps
- Mobile Shells

*Note: Only cloning within the same tenant is possible. No copying and pasting to other tenants/servers.*

## Custom number formatting

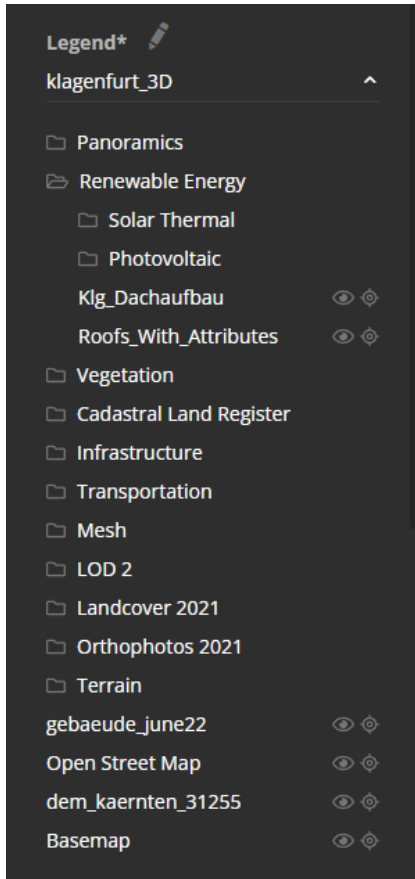
With the release of M.App Enterprise 2023, it is possible to put custom number formatting (numbers and date) into the tooltip in the “**Vector Data**” form.

You can put it directly within the placeholder e.g., `{ENTITY.latitude:0.00}`

Number format	Input	Output
<b>00000</b>	-1234.567	-01235
<b>0000.000</b>	-1234.567	-1234.567
<b>##</b>	-1234.567	-1235
<b>##00</b>	0	00
<b>.00</b>	-0.123	-.12
<b>0.00</b>	-0.123	-0.12
<b>#. #</b>	-1234.567	-1234.6
<b>#####</b>	-1234.567	-1234.567
<b>.#####</b>	-1234.567	-1234.567000
<b>#.000000</b>	-1234.567	-1,235
<b>#,###,###</b>	-1234567.890	-1,234,568
<b>'##</b>	-1234.567	-#1235
<b>'text'##</b>	-1234.567	-text1235
<b>yyyy-MM-dd HH:mm:ss</b>	20220805110000	2022-08-05 11:00:00

## Legend improvement in MapView definition

With the release of M.App Enterprise 2023 it is now possible to set layers within the MapView definition of your browser application to visible/invisible.



*Note: The icons only appear as soon as "Preview" is checked, and you are getting content for your browser application.*

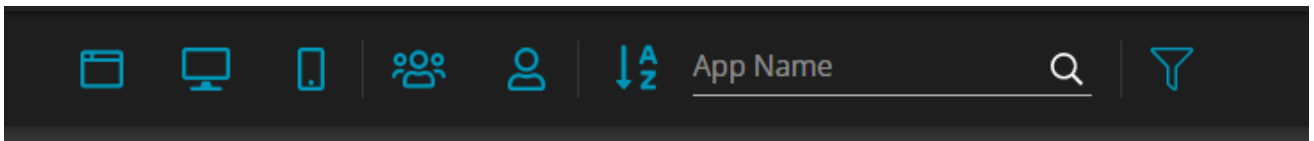
## MyApps page

The “MyApps” page got an entire overhaul in the latest M.App Enterprise release.

### One-page approach

Paging is gone in this release. This means every app the user has access to is available on one page. If you scroll down far enough, you’ll see a blue arrow icon on the right side to instantly jump back to the top of the “My Apps” page.

### New filter design



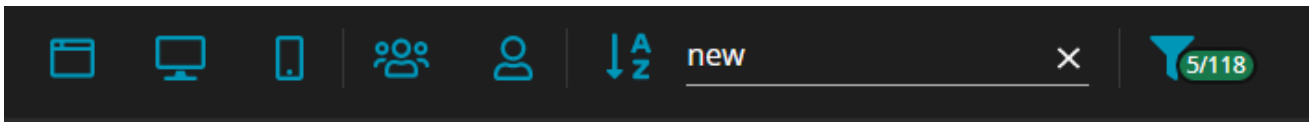
Starting from the left you can filter per app type:

- Browser
- Desktop
- Mobile

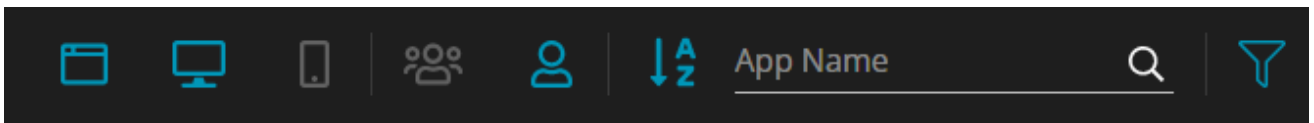
Then the second possibility is Accessibility:

- Public (App access without log-in credentials)
- Private (App access with log-in credentials)

You can also sort alphabetically ascending or descending, search for specific apps or reset the filter completely (the last button).



If a specific app type is not available, the button will be grayed out.



### Loading animation

It’s possible that the app (image) could take too long to load. For this reason, you will see at the bottom of the app thumbnail an animation which indicates that a loading process is happening.

### Gradient fill on top of thumbnails

Every thumbnail in this release gets a gradient fill on top of the image. Depending on the hover state it is either green to white or white to blue.

Not hovered thumbnail:



Hovered thumbnail:

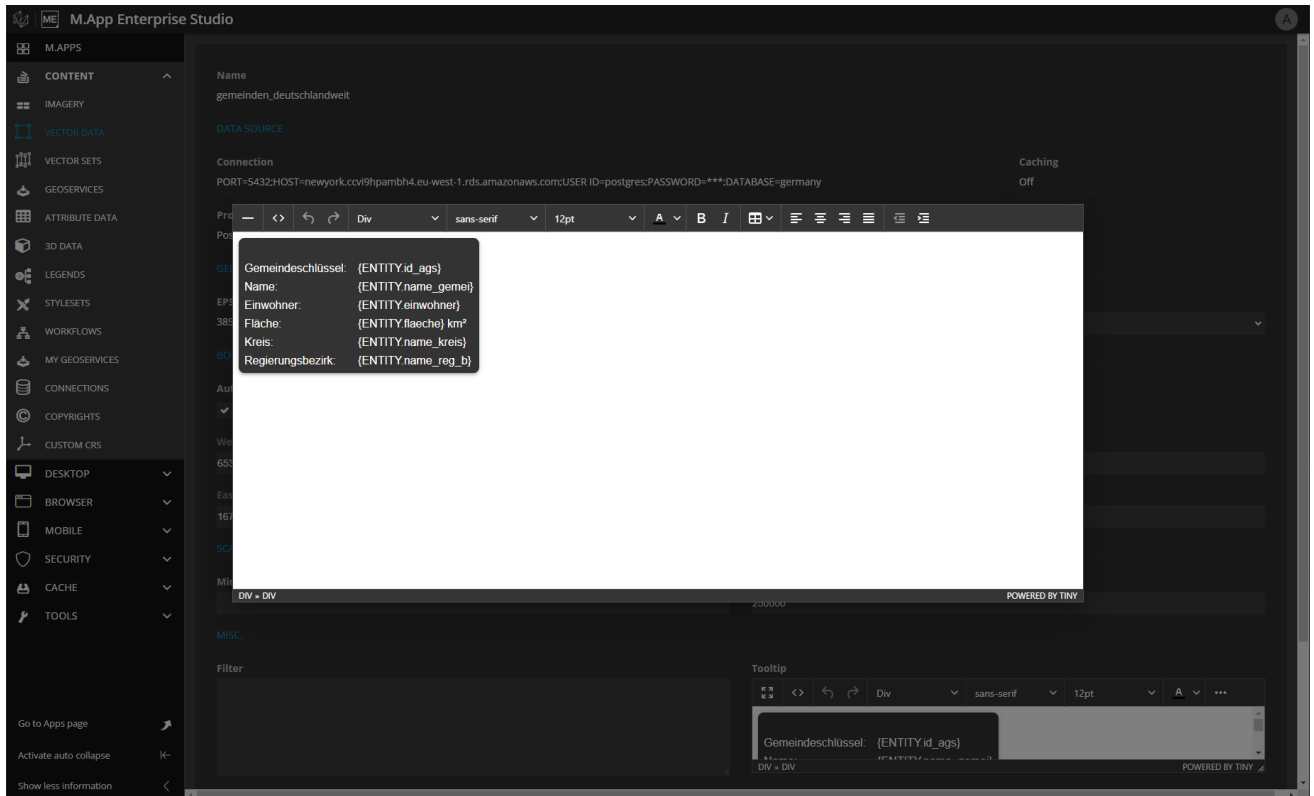


## TinyMCE update

The WYSIWYG editor for tooltips, “GetFeatureInfo” for WMS and within the M.App Enterprise Dashboard got an update in this version of M.App Enterprise.

There are some big advantages for the Studio administrator:

- Newest version of TinyMCE with the latest functionality and biggest customization available
- Possibility to pop out the entire editor






















































- The limitation of showing only 10 columns from the database is gone. Now you will see all available columns from the database.

## Browser application

### Thematic legend entries

With the release of M.App Enterprise 2023, we also support thematic entries in browser-based applications.

 Bus	   
 Panoramics	 
 For Forest Panoramics	   
 Renewable Energy	 
 Solar Thermal	 
<input type="checkbox"/> Collector Parallel	   
<input checked="" type="checkbox"/> Collector South 45° tilt	   
<input type="checkbox"/> Solar Thermal Modules	   
 Photovoltaic	 
<input checked="" type="checkbox"/> Module Parallel	   
<input checked="" type="checkbox"/> Module South 39° tilt	   
<input checked="" type="checkbox"/> Module East/West 10°	   
 Photovoltaic Modules	   

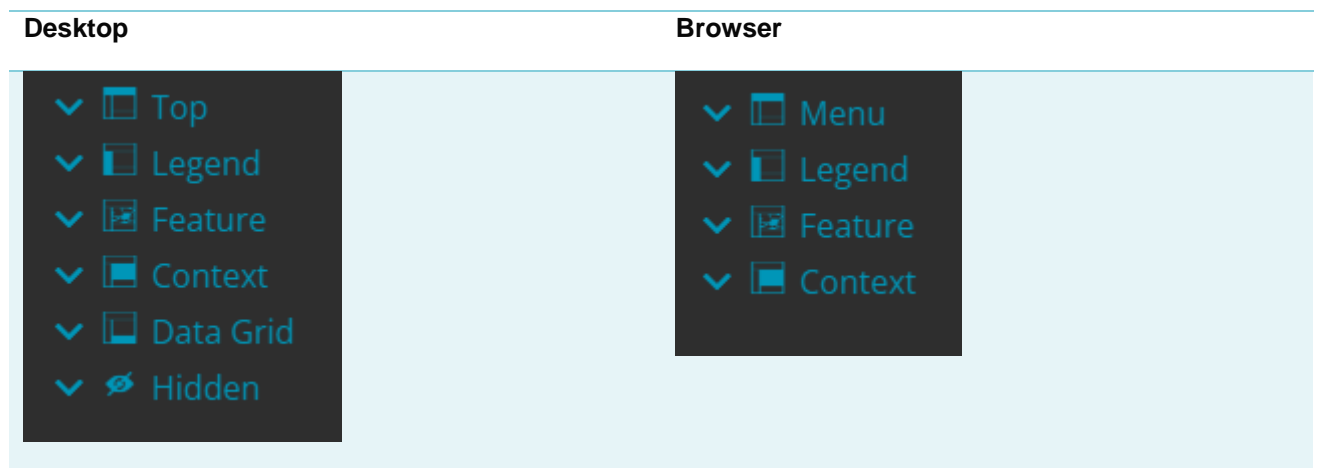
*Note: Visible styling is limited to Stroke and Fill color.*



## ActionSets in browser

The newest release of M.App Enterprise introduces action sets for browser-based applications. There are some differences/restrictions between the desktop and the browser action sets.

The biggest and most obvious difference is the lack or change of some locations of the actions themselves. In the desktop client, you can start the action in the top bar/header, but the browser doesn't have the header bar so the browser action can be started in the toolbar/menu. You can also find the "Layer Tree" and all the other tools you have enabled in the M.App Enterprise Studio for this specific browser application. Because of the lack of the "Data Grid," we are not supporting this location in the browser application, but the rest is working as you are used to from the desktop client.



There are also some restrictions on the functionality of the browser-based actions compared to the desktop side.

Only working SC.digitize Methods:

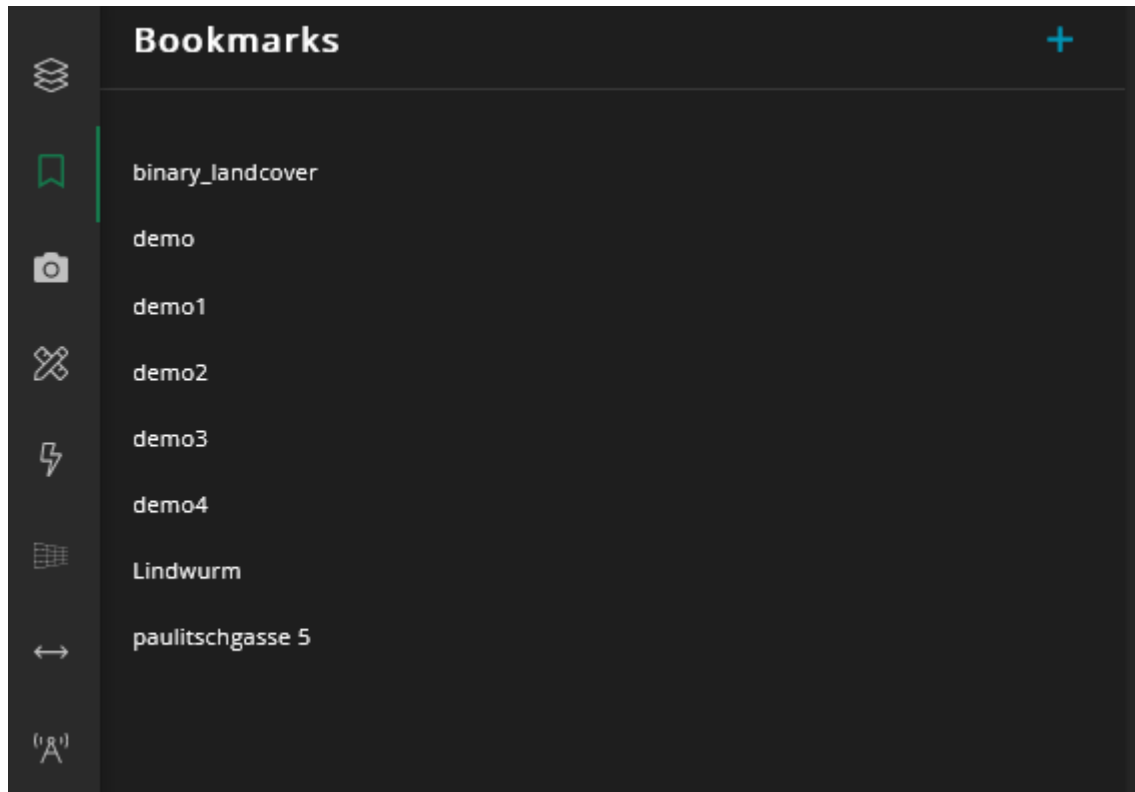
- GE\_NewPoint
- GE\_NewPolyline
- GE\_NewPolygon
- GE\_Modify
- GE\_Move
- GE\_Delete

And

- SC.Fit

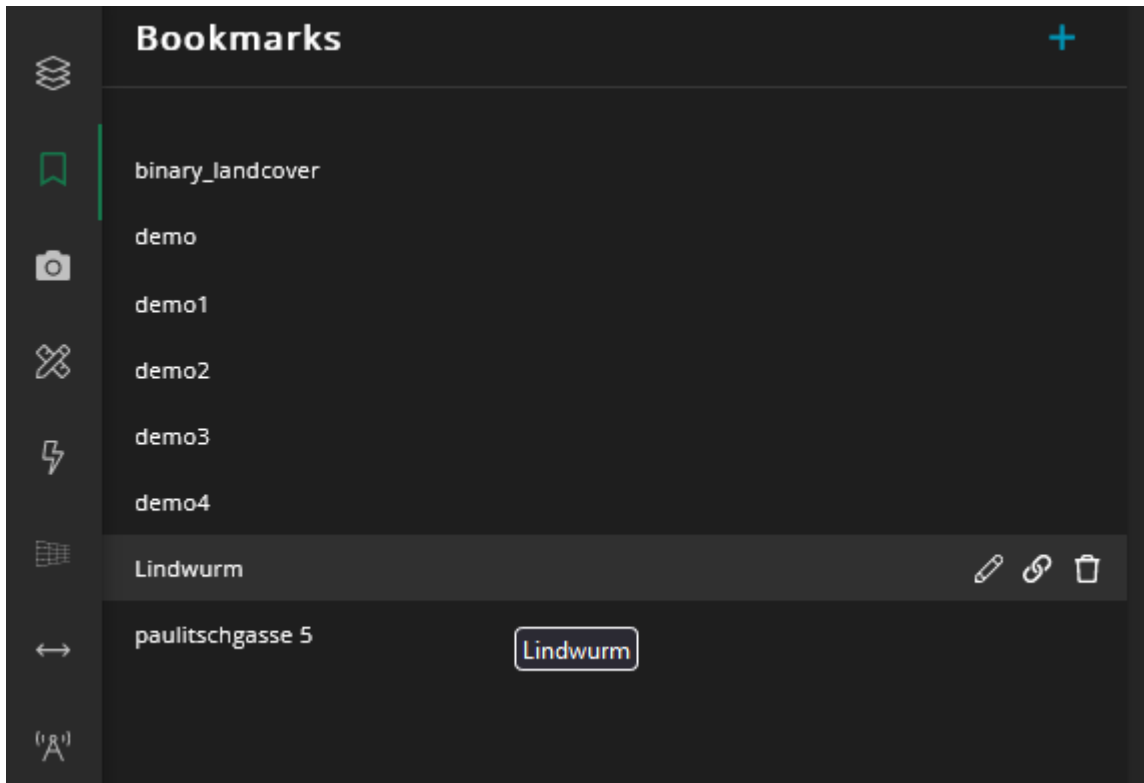
## Bookmarks

Bookmarks are always available for all users with log-in credentials. Public users won't get access to the "Bookmarks" section in the toolbar.



With the "+" symbol, you can add new bookmarks and then save the state of the map.

After saving, you have three more options for the bookmark.



You can edit the bookmarks and rename them or save a newer state of the map. If a new state of the map should overwrite the existing one, you must click **“Capture Map State”** and then on the **“Save”** icon to save every change. You can also share the link with other people.

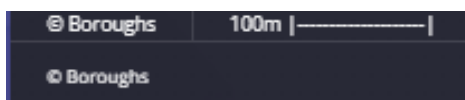
*Note: The users you share the bookmark with need access to the same app.*

And finally, you can delete the bookmark you’ve created.

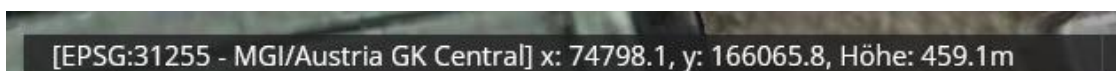
## New code snippets

With the latest release of M.App Enterprise some new code snippets were added for the administrator:

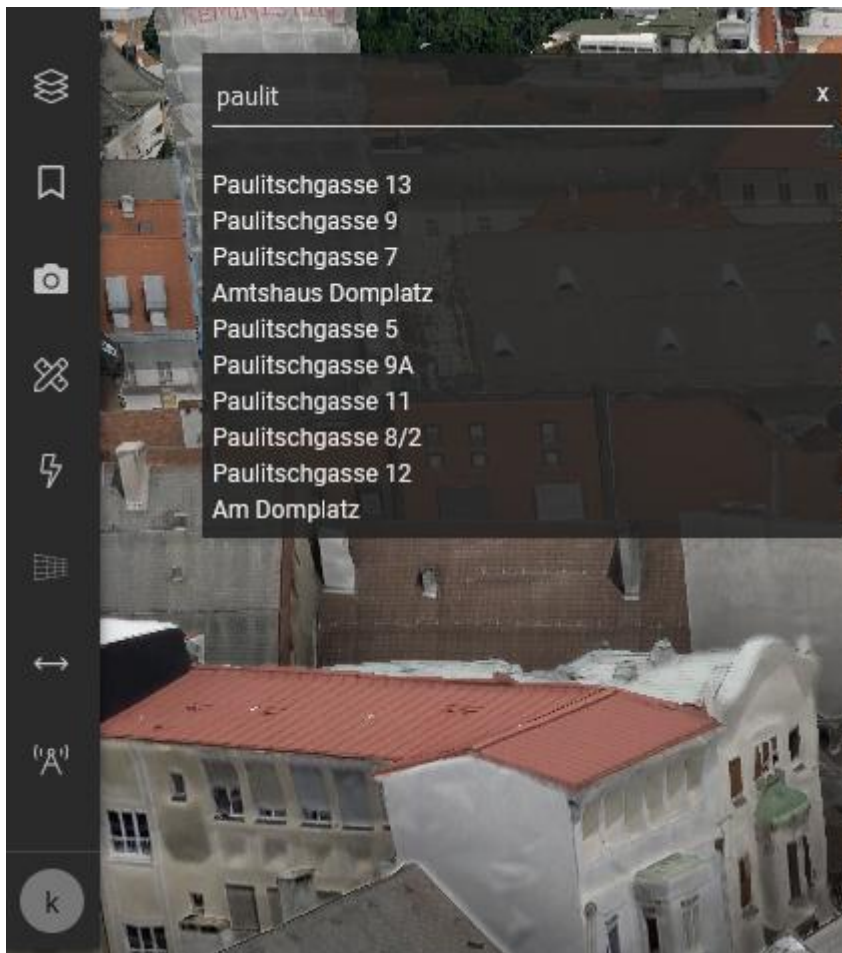
- Add a copyright notice (adding copyright information to the status bar)



- Get mouse location (showing coordinates of your mouse in the status bar in a supported CRS)



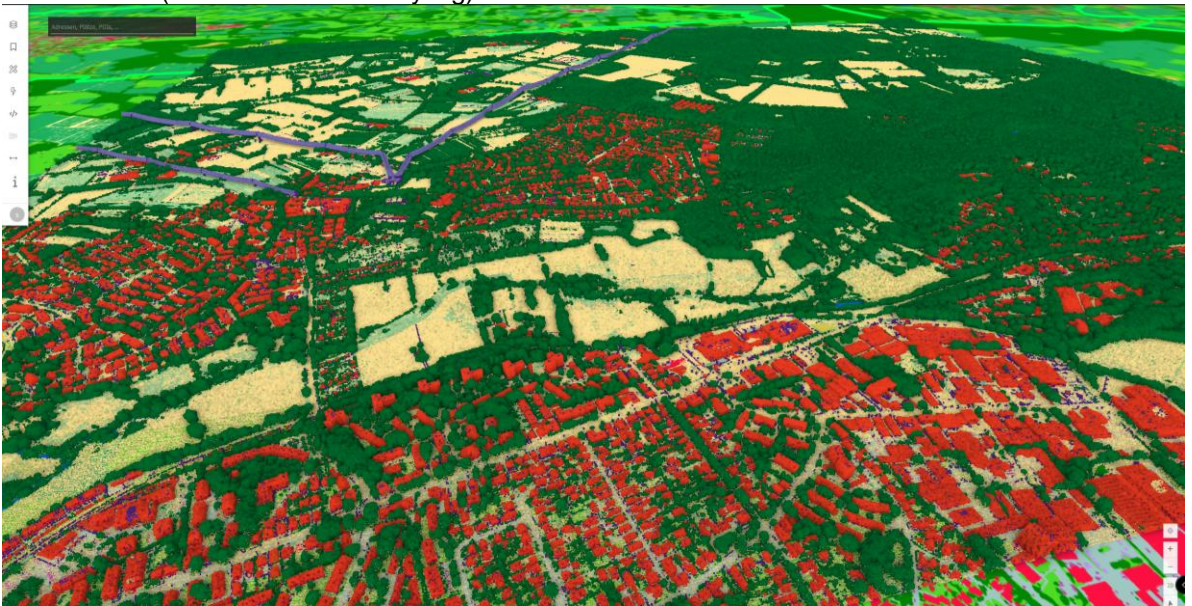
- Address search (full-text search based on addresses/locations in your database)



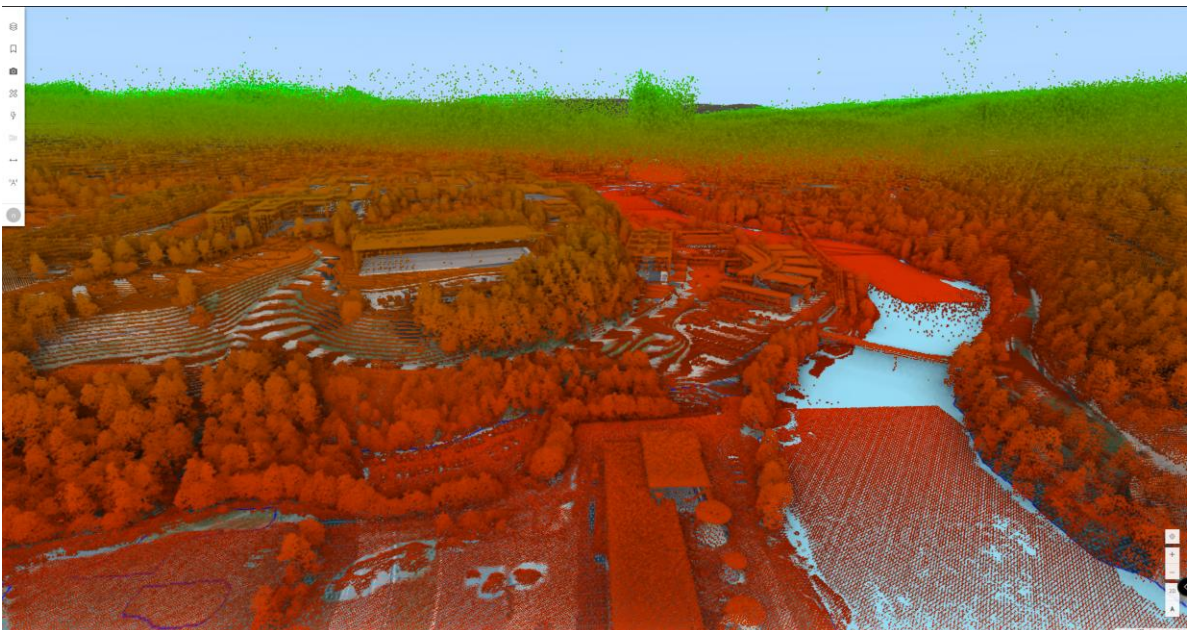
- Change selection style (possibility to overwrite the default selection style in the browser environment)
- Simple Header Markup (access to M.App Enterprise styling for your panels)
- Simple Header Style (access to the M.App Enterprise parameters for styling your panels)
- Define Basic Classes for Color (possibility to overwrite the primary and secondary colors for your panels)



- Point Clouds (Classification and Styling)



Classified point cloud based on attributes within the data



Styled point clouds based on the height of the point

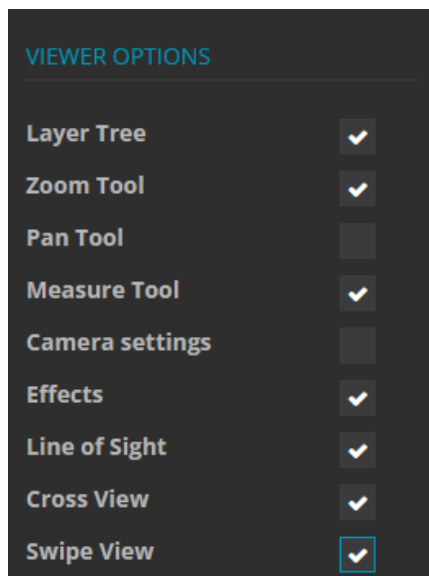
## New status bar

The status bar changed for the browser application in M.App Enterprise 16.8. The mouse coordinates with code snippets as you like to design it with additional copyright information and a fixed scale bar.



## New toolsets (Cross-, Swipe View, Line of Sight)

All new toolsets can be activated in the “**Map View**” definition of your browser app:

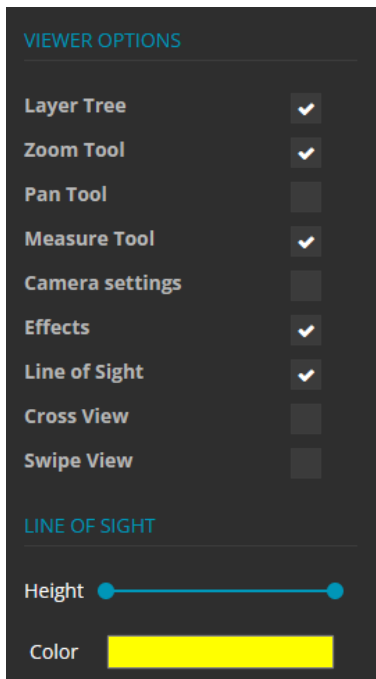




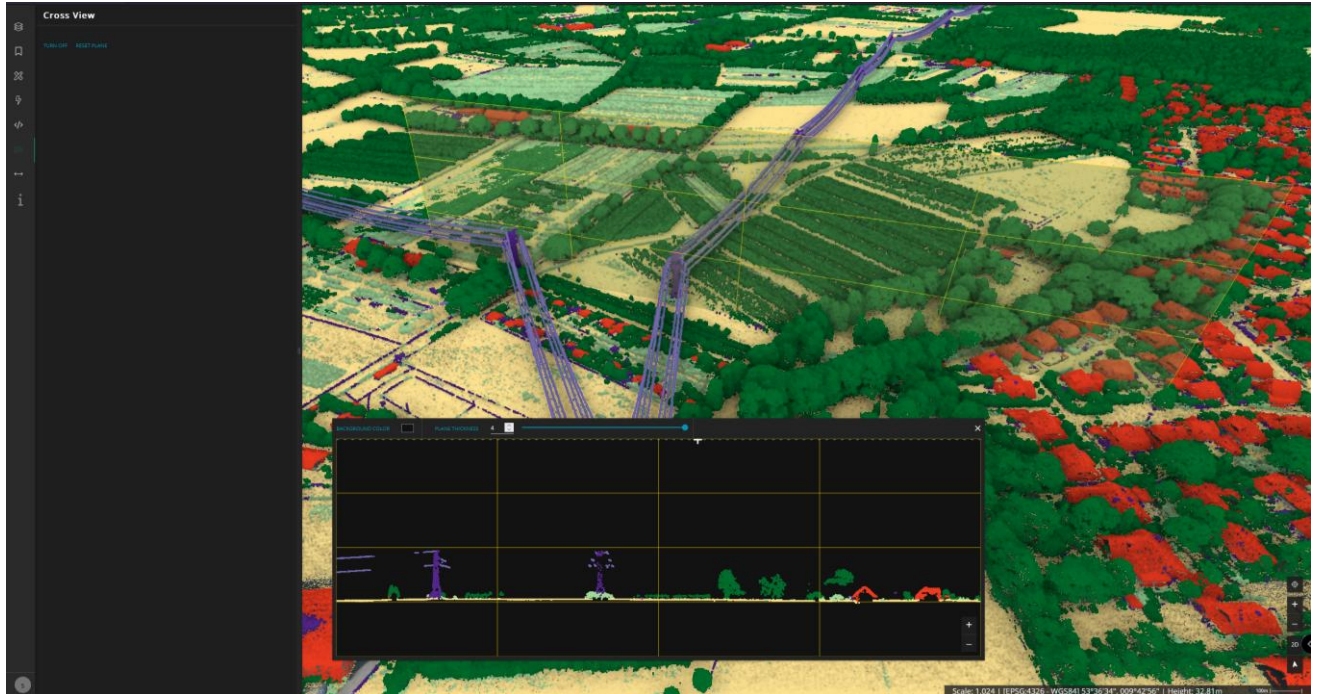
“Line of Sight” allows you to get information about what is visible from a specific point in the map with a specific height:



The color of the circle is defined in the studio and the range of possible heights:



“Cross View” allows you to “cut” through the map and see, in a separate window, what the “cut” planes hit in the map.

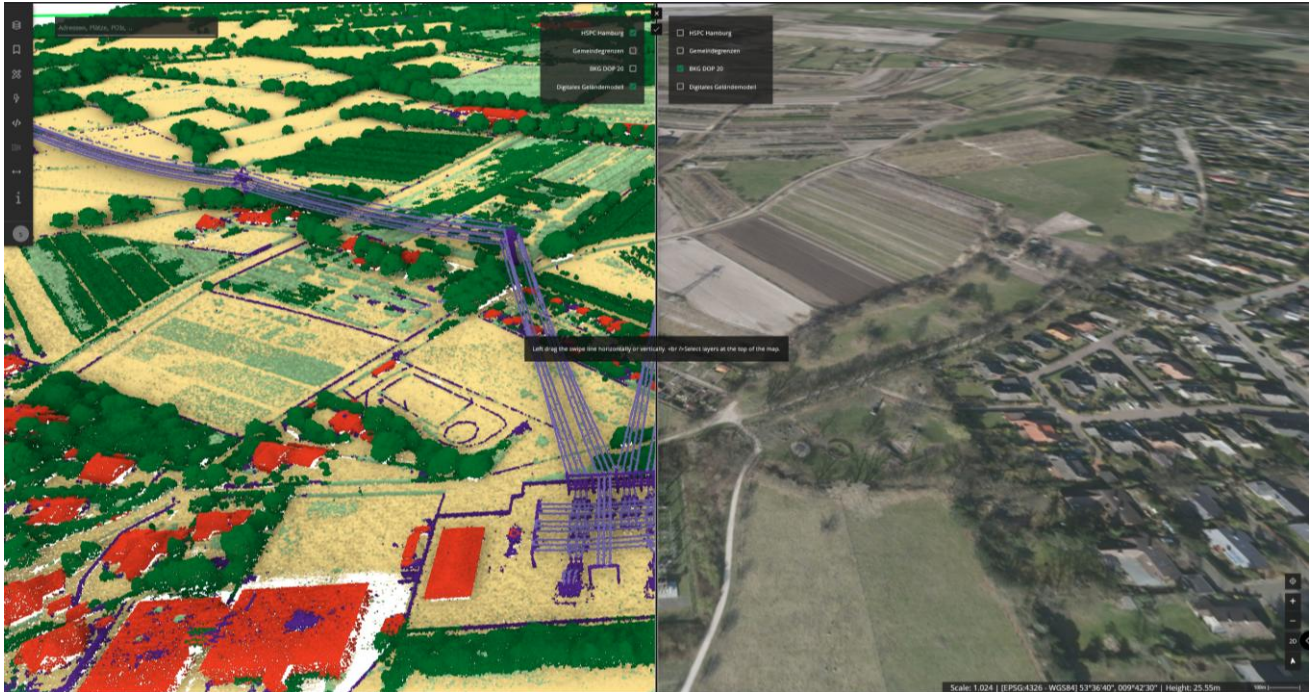


You can move the plane, make it bigger and even make the lines within the separate window thicker or thinner. On top of that, it is also possible to change the background color of the window of the cross view.

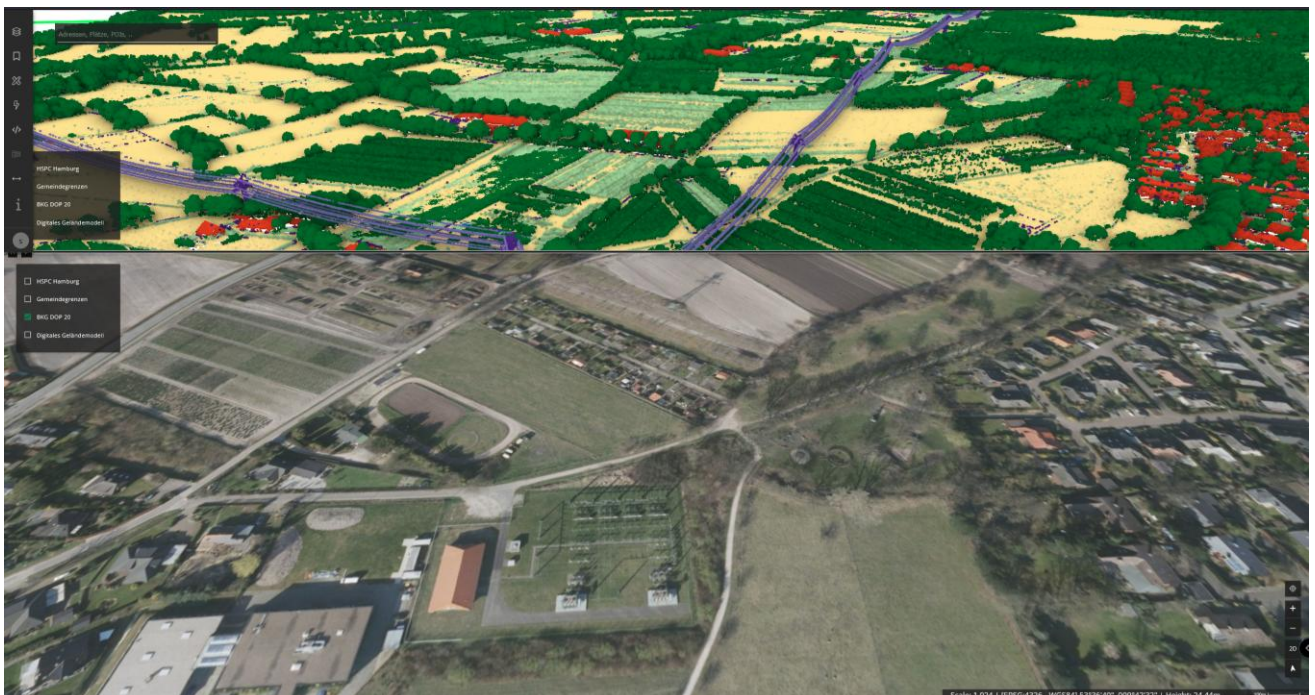


“Swipe View” allows you to separate the map view temporarily in two different views, where you can decide per window which layers should be visible.

Vertical split:

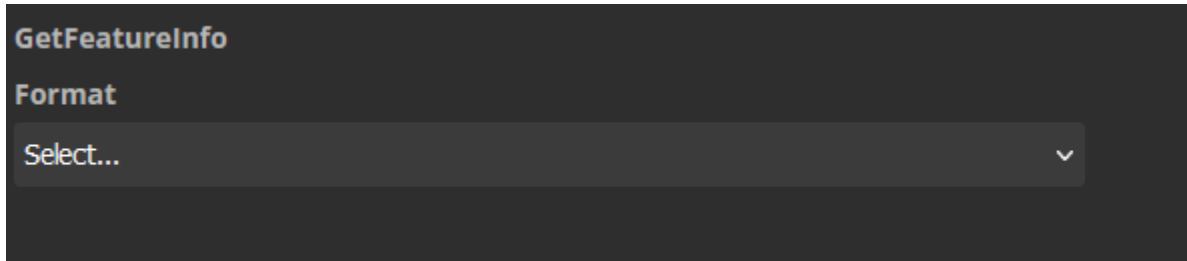


Horizontal split:

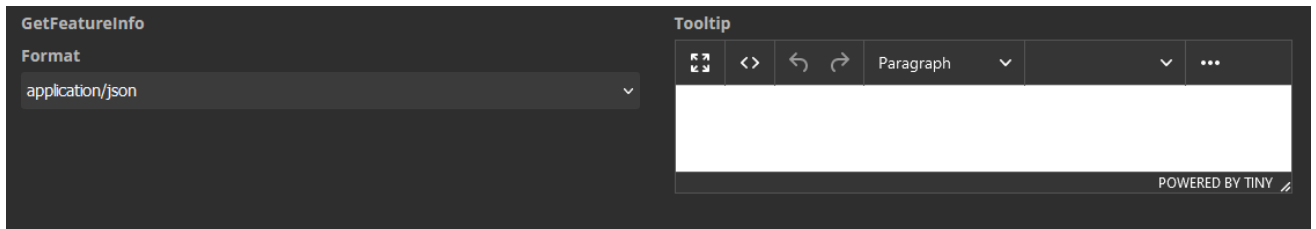


## GetFeatureInfo on WMS

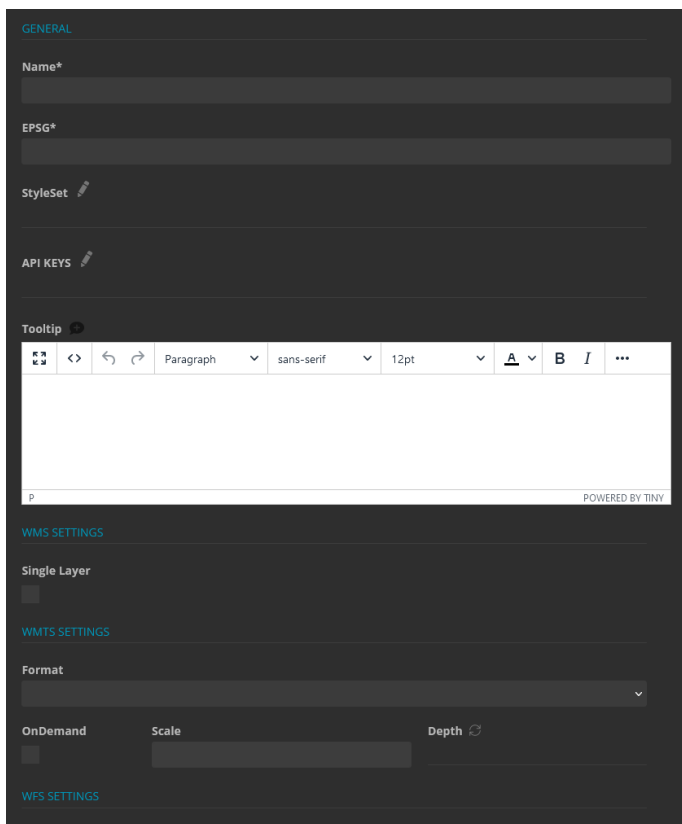
If you are connecting to a WMS, you can choose the “FeatureInfo” as a tooltip in the browser application. The drop-down list is automatically filled with the options the service is giving back.



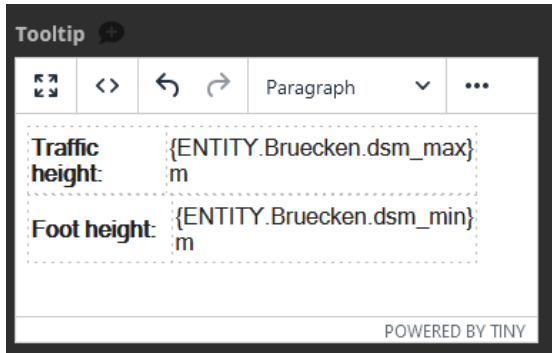
If “**application/json**” is selected, you can also define your own tooltip and layout/design of it.



If you are using “**MyGeoservice**” you can define your own tooltip.



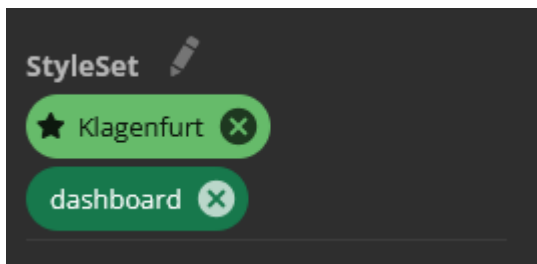
If you click **“Add layer tooltip”** the tooltip from the vector data is taken over to this tooltip editor and automatically set to a readable format.



*Note: Don't worry, the placeholder here looks a little bit different {ENTITY.LAYER.COLUMN} vs. to the layer tooltip {ENTITY.COLUMN}.*

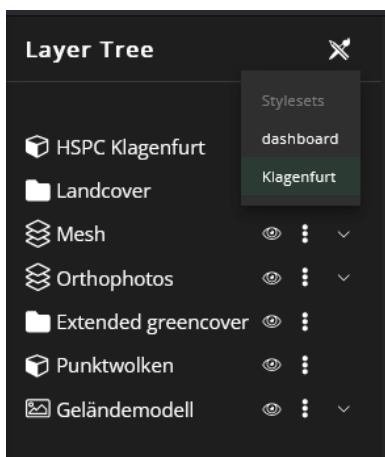
## Support of more than one stylesets

With M.App Enterprise it is now possible to assign more than one styleset to your browser app.



“StyleSets” marked with an asterisk are loaded by default when the app is opened. Additionally, the background color of the default “StyleSet” is a lighter green.

In the browser app itself all “StyleSets” are listed alphabetically, and you can switch between all assigned “StyleSets.”



## New custom camera control

The newly written custom camera controller allows you to limit your pitch angle and your flight heights of your camera.

Somewhere in your custom script you would have something like:

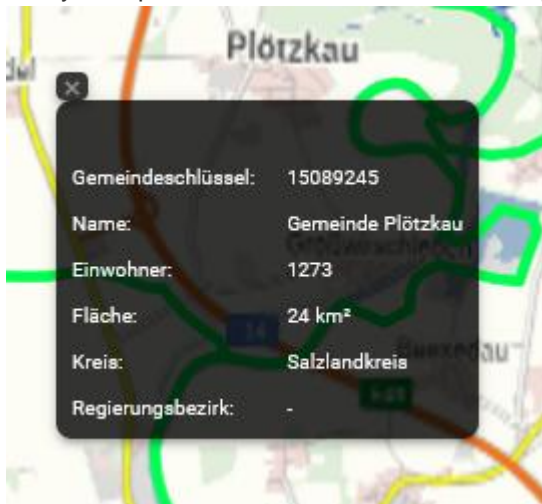
```
ready() => {  
  main();  
}
```

Then you would be able to customize it with:

```
window.map.stores.navigation.pitchBounds3D = {minPitch: -90, maxPitch: -40};  
window.map.stores.navigation.altitudeBounds3D = {minAltitude: 30, maxAltitude: 2000};
```

## Close button on all tooltips

Every tooltip now has a close button to forcibly close the tooltip.

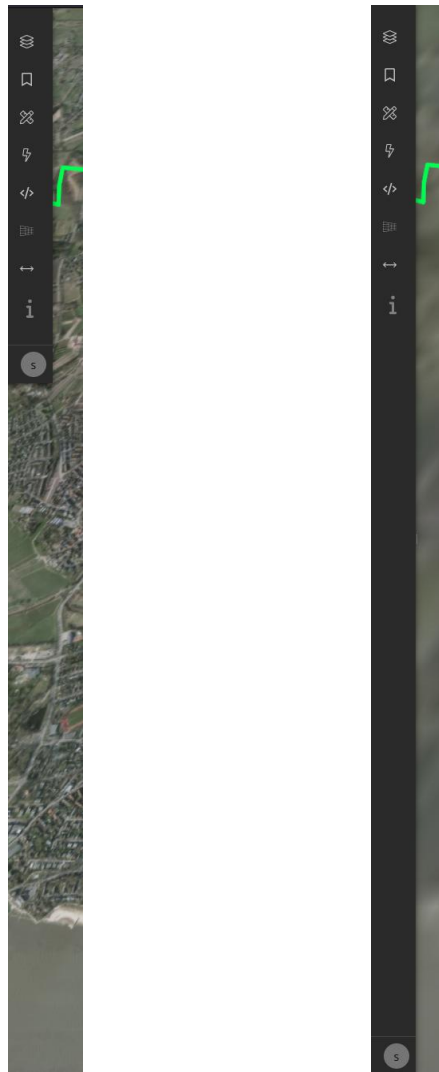




## New options for menu bar

In M.App Enterprise 16.8 we are offering new options for your menu bar in the browser application (browser and dashboard).

You can select the side of the menu bar, especially of interest for your dashboard definition. And you can select if the menu bar should be full or content height:



*Note: If anything from the menu bar is opened e.g., “Layer Tree,” the menu bar always goes into full height mode during the time you are working there.*

MENU	
Position	<input type="radio"/> LEFT <input type="radio"/> RIGHT
Height	<input type="radio"/> FULL <input checked="" type="radio"/> AUTO

## Dashboard

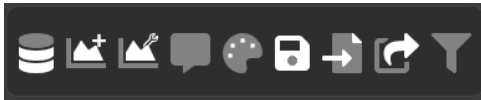
This version of M.App Enterprise has renamed the “Feature Analyzer” component to “Dashboard” in the platform.

### Map View replacement

Leaflet has been retired in this version, and M.App Enterprise Dashboard is exclusively using the standard M.App Enterprise Browser Map/LuciadRIA. Your “Leaflet Map View” widgets will be automatically migrated to LuciadRIA when it is first opened. The migration process is mostly automatic. “Standard Browser Map” functionality will now be available in “Dashboard” features such as “Map View” configuration and “Create/Edit” support.

### New Dashboard configuration

The dashboard configuration slide-out has been replaced with a new, intuitive configuration mechanism. General configuration is now accessed through a launcher bar. Individual chart configuration is now launched from each chat in the dashboard.



Much of the functionality that was on the configuration menu is now on the launcher bar.

- Dataset Configuration

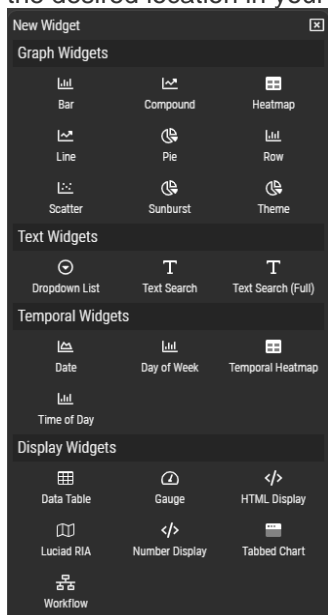


The same dataset configuration found in previous versions can be now found here.

- Add New Widget



The “Add New Widget” replaces the “Add New Chart” section on the configuration slide-out. If you click on it, you will get a list of all available types and you can either click on one of them or drag it to the desired location in your dashboard.

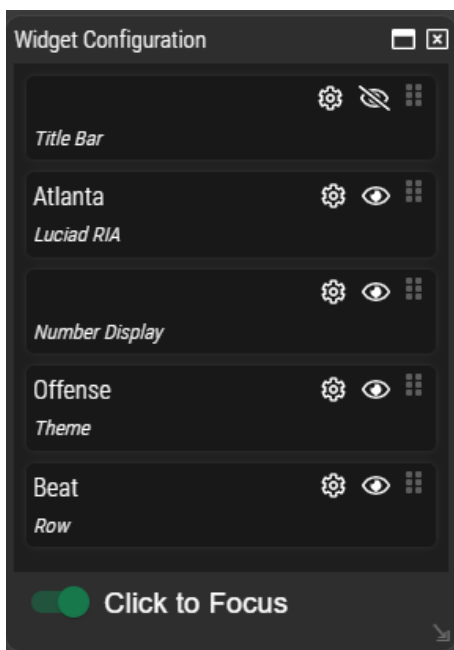


- Widget Configuration



“Widget Configuration” allows you to view all widgets in a list that are currently on your dashboard. From here you can manually change the display order by dragging and dropping, launching the widget configuration or setting the widget visible/invisible.

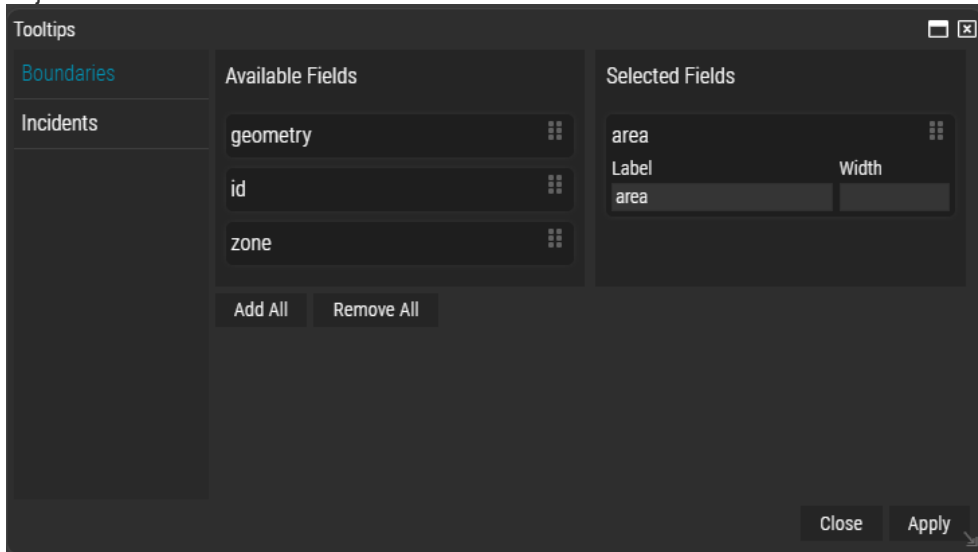
When “**Click to Focus**” is enabled, you can change the order of your widgets by simply clicking on a widget in the dashboard. Clicking on a widget will bring the widget to the top. Toggling “**Click to Focus**” off will lock the widget display order. In this state, widgets can only be reordered by dragging and dropping them in this configuration dialog.



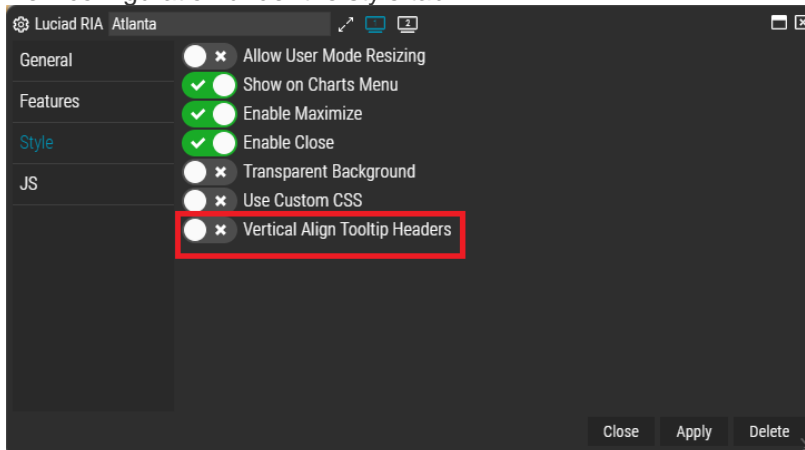
- Tooltip Configuration



“Tooltip Configuration” allows you to define and configure tooltips for your dashboard map view features. The tooltip configuration has been redesigned to allow easier defining and reordering of tooltips. To define a tooltip, select the dataset from the left column and then simply drag a field from the “Available Fields” to the “Selected Fields” section. Once in the “Selected Fields” section, you can adjust the label or define a static width.



Tooltip headers can have a horizontal or vertical alignment. This setting can be accessed on the map view configuration under the style tab.

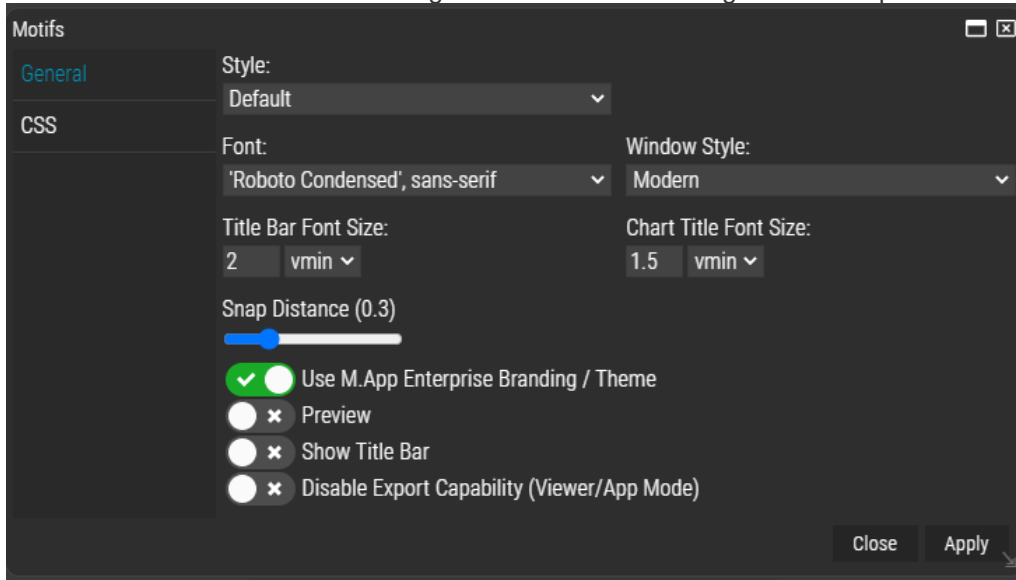




- Motifs



You can now define a global CSS from the motif configuration. To do this, open “Motif Configuration” and click CSS. General “Motif” configuration remains unchanged from the previous version.



- Save



You can save your view from the launcher bar. “Save” functionality has been moved from the menu bar to the launcher bar in this version.

- Import View

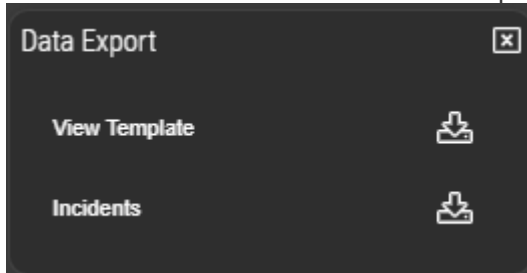


Allows you to import an exported view template. This functionality has been moved from the “Dataset Configuration” to the launcher bar in this version.

- Export



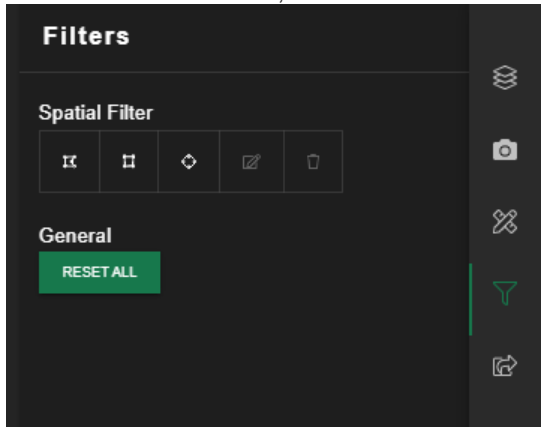
Export allows you to download your view or view data. Export functionality has been moved from the menu bar to the launcher bar and the “Map Menu” in this version.



- Filter All



Filter all has been moved from the “User” menu to the launcher bar and “Filter” section on the map view. To reset all filters, click this button or the reset all button in the “Map Menu.”

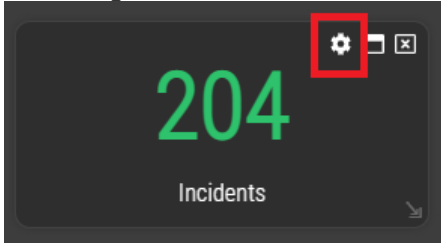


## Widget Configuration

“Widget Configuration” has been made easier in this release. You can now:

- Launch “Widget Configuration” right from the dashboard
- Not have to reload your view after each change. Just the affected widget is reloaded

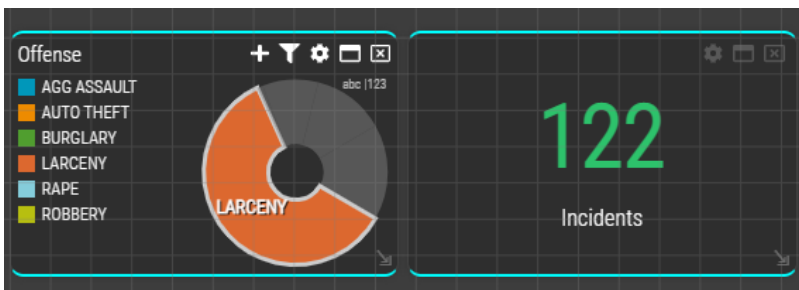
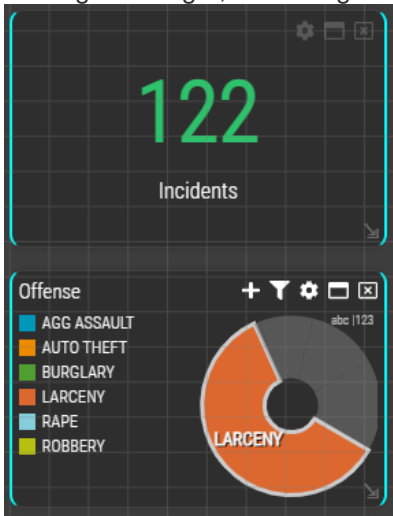
There are two ways to launch the widget configuration. The first is through the configuration cog at the top of each widget:



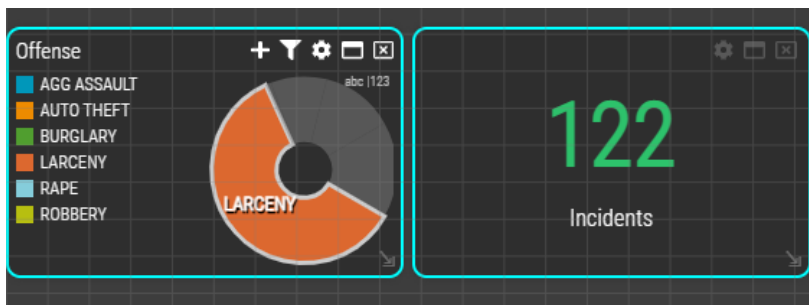
Alternatively, you can launch “Widget Configuration” through the launcher bar.

## Sizing guides

Sizing guides have been added and will display automatically when moving or resizing a widget. A side of the widget will highlight to indicate the widget border is aligned with another widget on the dashboard. When moving the widget, the left/right/top/bottom side will highlight to indicate alignment:

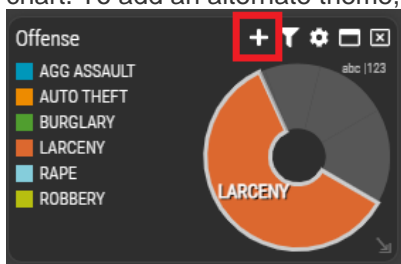


When resizing a widget, each side will highlight to indicate the widget matched the height (top and bottom will highlight), or width (left and right side will highlight). All four sides will highlight to indicate the width and height match another widget on the dashboard.



### Alternate Theme configuration

“Alternate Theme” configuration has been moved from the “Configuration Slide” to each individual theme chart. To add an alternate theme, click the “+” icon on the theme chart.



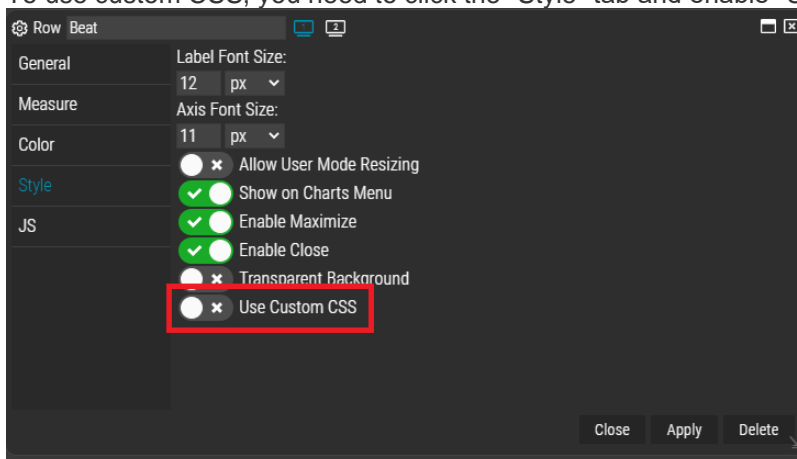
### Widget customization

Each widget now has options for configuring custom code and styles. Custom code is run when the widget mounts. To write custom code, open the configuration for a widget and click the JS button. The “this” keyword represents the current widget. As an example, if you wanted to alert the widget title on mount you would write:

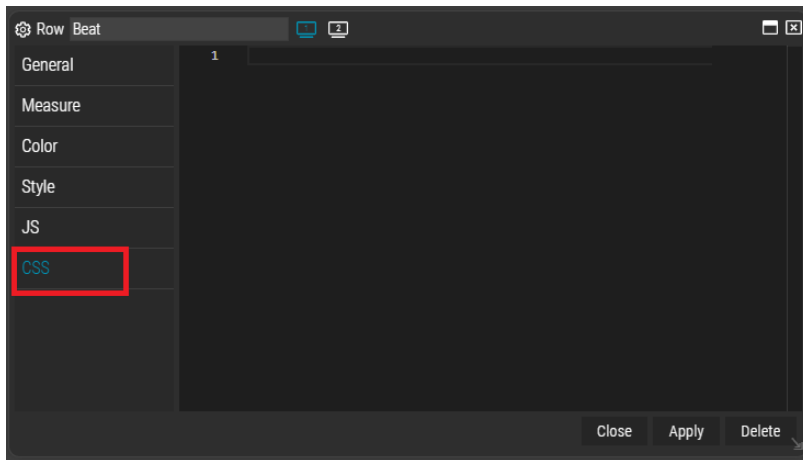
```
alert(this.title);
```

In addition to this, LuciadRIA widgets have been enhanced to support the entire LuciadRIA API with intellisense.

To use custom CSS, you need to click the “Style” tab and enable “Use Custom CSS.”

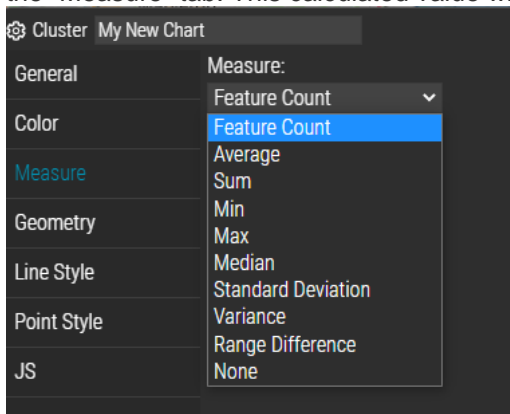


Once this toggle is enabled, a CSS tab will appear on the left where you can define custom styles. Note that these styles are not global and are scoped only to the current widget. If you want to define a global style, use the “Motif” configuration.



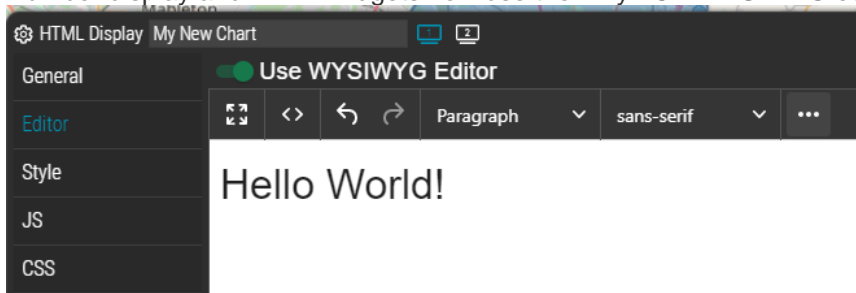
### Cluster configuration enhancements

“Cluster” labels now support measures. To select a measure, open the “Cluster Layer Configuration” and click the “Measure” tab. This calculated value will appear in the center of the cluster.

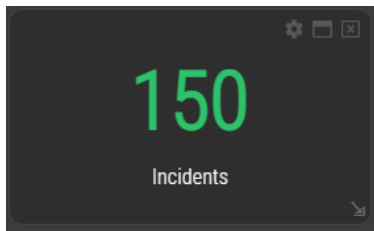


### Number display and HTML widget enhancements

Number display and HTML widgets now use the TinyMCE WYSIWYG editor.

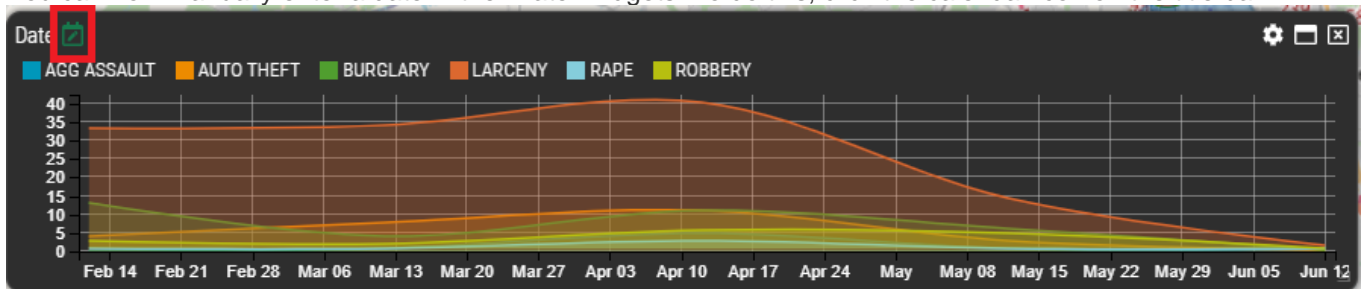


Number display charts now have default BAN formatting



### Date widget enhancements

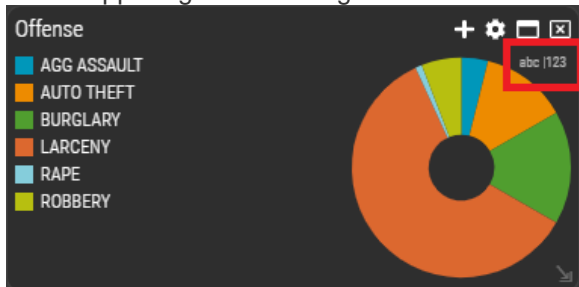
You can now manually enter a date in the “Date” widgets. To do this, click the calendar icon on the title bar.



A modal dialog will appear with the option of entering in a start and end date/time.

### Pie/Theme chart enhancements

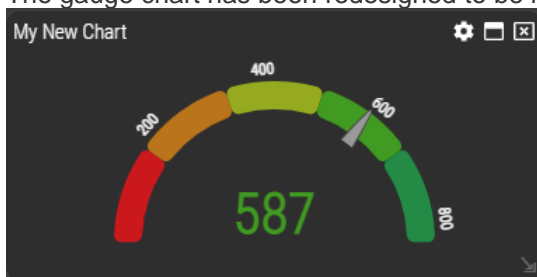
You can now sort the pie/theme chart legend by measure value or by label. To do this, click the “abc/123” icon on the upper right of the widget.



Icons that have been defined as part of a styleset will now be displayed in chart legends.

### Gauge chart redesign

The gauge chart has been redesigned to be more aesthetically pleasing.



## Desktop

### New design

To be consistent with the brand/theme of M.App Enterprise Management/Studio/Apps, we did an overhaul of the design/layout of the desktop client.

There are several changes:

- Change of font family to Google Open Sans
- Scale moved from above the “Overview” to the status bar
- Everything in the status bar is clickable, editable and larger
- Flattened all icons (plug-ins and workflow action icons)
  - Long click on the icon still opens all other actions
- Icons in the header bar moved to the left instead of middle and right
- Integration of the user menu in the header bar
- All buttons got an icon in front of the text

Here are some screenshots of the changes:

#### Header bar

Old:

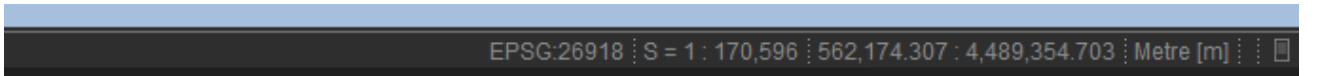


New:

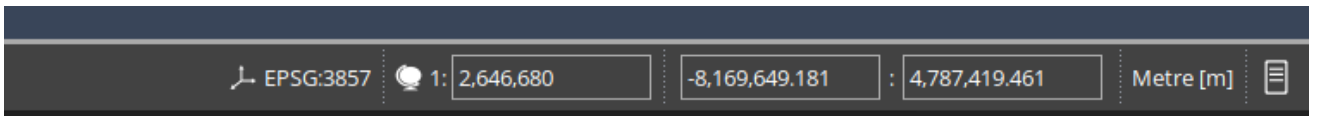


#### Status bar

Old:

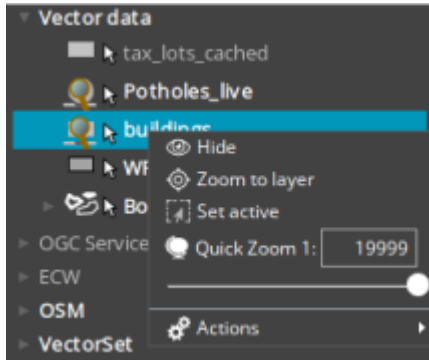


New:



## Fit to layer extents

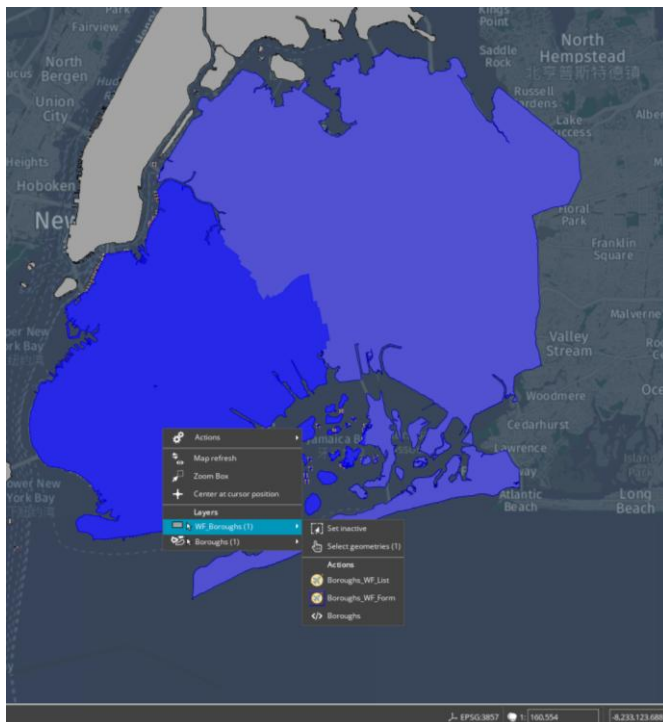
One functionality which was from the beginning available in the browser client came over to the desktop client for this version of M.App Enterprise. You now can right click on any layer and get the function “**Zoom to layer.**”



## Map context menu improvements

A right click in the map gives you even more options to choose from in the newest version of M.App Enterprise.

With every right click you get information about all layers the click hits. In the screenshot below you can see that just one layer was hit, and you get all available actions to this layer: Queries and workflow actions. You can also select the geometry or set it active. If you click a workflow action the geometry is automatically selected.

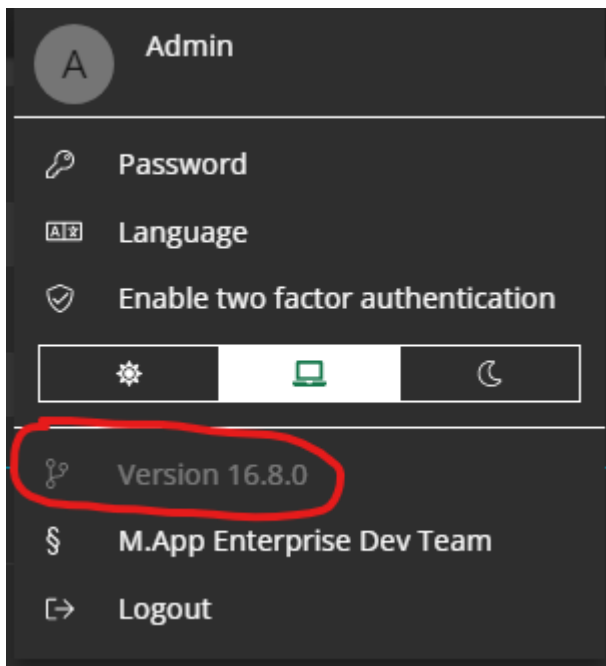




## Management

### Show version number

In the management and the M.App Enterprise Studio we are showing the version number of the current installation and if a new version is available.



### Edit tenants in management

With the release of M.App Enterprise 2023 it is possible to edit the tenants. Besides activating/deactivating two factor authentication for the entire tenant, it's also possible to add or remove the active directory.

## Setup

Automatic upgrade to all language packs installed on the server.

# System requirements

## M.App Enterprise 2023

Server:

Computer/Processor	64-bit: Intel® 64 (EM64T), AMD® 64 or equivalent (Multi-core processors are strongly recommended)
Memory (RAM)	8 GB or more strongly recommended
Disk space	<ul style="list-style-type: none"> <li>1.3 GB for software</li> </ul>
Production environment	<p>Two different types of server:</p> <ul style="list-style-type: none"> <li>One application server</li> <li>One tile server (for cache creation)</li> </ul> <p>If M.App Enterprise PRO license with LuciadFusion is used:</p> <ul style="list-style-type: none"> <li>One LuciadFusion application server</li> </ul>
SSL certificate	M.App Enterprise comes with a preconfigured self-signed certificate. But like in many cases, an organization should come up with their own certificate from a trusted certificate authority (CA). It can be a domain certificate issued by your organization or a CA signed certificate.
Operating Systems	<ul style="list-style-type: none"> <li>Windows Server® 2012 Standard and Datacenter (64-bit)</li> <li>Windows Server® 2012 R2 Standard and Datacenter (64-bit)</li> <li>Windows Server® 2016 Standard and Datacenter (64-bit)</li> <li>Windows Server® 2019 Standard and Datacenter (64-bit)</li> <li>Windows Server® 2022 Standard and Datacenter (64-bit)</li> <li>Windows Server® 2025 Standard and Datacenter (64-bit)</li> </ul> <p>Note: Windows 8.1, 10, 11 are supported for basic testing and not recommended for deployment in a production environment</p>
Software	<ul style="list-style-type: none"> <li>.NET 4.8 or higher</li> </ul>
Database engines	<p>Minimum:</p> <ul style="list-style-type: none"> <li>PostgreSQL 9.4 with PostGIS 2.0</li> <li>Oracle® Server 12c 64-bit (Oracle 12.1)</li> <li>Microsoft® SQL Server® 2012 64-bit</li> </ul> <p>Tested on our development environment:</p> <ul style="list-style-type: none"> <li>PostgreSQL 16 with PostGIS 3.5.0</li> <li>Oracle® Server 21c 64-bit</li> <li>Microsoft® SQL Server® 2019 64-bit</li> </ul>

## Client:

Computer/Processor	2 GHz minimum, Hyper Threading or multi-core recommended
Memory (RAM)	2 GB or more strongly recommended
Display properties	24-bit color depth
Screen resolution	1024 x 768
WebGL	WebGL 2.0 is required to run LuciadRIA with the hardware-accelerated map in 2D or 3D. If your browser and hardware are capable of rendering LuciadRIA maps you can do the check here: <a href="https://webglreport.com/?v=2">https://webglreport.com/?v=2</a>
Peripherals	Mouse or pen for input For tablets: Digitizer is recommended
Networking hardware	Simple TCP/IP, Network Card
Disc space	200 MB
Operating systems	<ul style="list-style-type: none"> <li>• Windows 7 Extended Security Update Year 3*</li> <li>• Windows 8.1</li> <li>• Windows 10</li> <li>• Windows 11</li> </ul>
Supported web browsers	<ul style="list-style-type: none"> <li>• Google Chrome</li> <li>• Mozilla Firefox</li> <li>• Microsoft Edge</li> </ul>
Supported mobile platform	<ul style="list-style-type: none"> <li>• Android 5.0 or higher</li> <li>• iOS 8 or higher</li> <li>• Windows 1709 or higher</li> </ul>

# Issues resolved: M.App Enterprise 2023 Update 6

Support ticket	Summary
00355603	SESSION.Map.MapBounds doesn't work
00362004	TileService fails to publish a layer which has no data

# Issues resolved: M.App Enterprise 2023 Update 5 Patch 1

Support ticket	Summary
00152295	Loading of config is taking too long if the preview image is too large for Desktop App
00347760	Queries not working on MS SQLServer
00343101	Management table MAPP_REFRESH_TOKEN records growing in time
00341843	DBVersion gets duplicated for exported / imported tenants

# Issues resolved: M.App Enterprise 2023 Update 5

Support ticket	Summary
00292573	CRS issues, when Axis Order is swapped
00300456	Tooltips for Browser ActionSets not working
00294408	Legend settings aren't saved properly
00295923	Desktop labels disappear from map
00292866	Action sublist for WMS doesn't disappear for Hebrew Desktop App users
00292877	Overriding default branding in tenant, makes workflow right click menu entries to be completely blended with selection color
00292871	Organizing the legend other than the 'Hierarchy' mode, makes selected layer entry to 'disappear' (or white on a white background)
00290566	Potential SQL injection security risk
00279181 00292874	Can't read tables from MS SQL in a schema other than dbo
00277461	The "x" Button on custom panels led to confusion, because the custom panel gets deleted and not closed when hitting the button
00273773	NULL values displayed as string "null" in desktop tooltip
00293638	EPSG: 6316 not supported

# Issues resolved: M.App Enterprise 2023 Update 4 Patch 1

Support ticket	Summary
00255749	"-XX:+CMSParallelRemarkEnabled" cause LF failed to start with JDK17
00251190 00257653	Workflow : SESSION.Map.MapSelection no longer works, returns error
00262952	WKT problems for EPSG: 26191, 26192, 26194, 26195

# Issues resolved: M.App Enterprise 2023 Update 4

Support ticket	Summary
00108829	WFS from M.App Enterprise can't be consumed in GeoMedia
00115338	Style Editor preview issues for points with black color
00114405	Point symbolizer not filled
00114406	Dynamic labelling from the database leads to "undefined" strings if database value is NULL
00115099	Issue when passing ID's from forms to lists
00133211	Unable to use HTML tooltips in dashboards
00135095	Preview was wrong when a black filled polygon with opacity was defined
00135099	Dashline alternation with meter based values was wrong
00140712	ActionSet location "Grid" was not correct displayed in German
00140797	Dasharray dropdown was empty
00152969	Compound charts don't show the tooltips
00152970	x-axis gets shifted as soon as the chart gets into a compound chart
00159609	Layer outside of CRS bounds throws an error
00159620	Max zoom doesn't work in Geometry locate (Dashboards)
00160745	Date range text for "Temporal widgets" in Dashboard was too big
00162634	Problems with public apps within an Azure AD tenant
00176384	Label for "FormSingleRow" was not rendered
00023450	Originally an GMSC bug but was also valid for MAE: Help button is disabled as soon the parameter "editable" was set to "false"
00187380	Closed widgets icon overlaps the menu of the browser map
00190149	"Pass M.App Enterprise headers" wasn't working properly
00191371	"Launch a workflow" code snippet is broken
00194458	Comma separator was not usable on Android within number fields in the form
00212992	Shared scripts are not supported on map selection scripts
00214753	Maximum connections to the PostgreSQL DB connection pool reached very quickly
00220441 00222215	Strange date time formats in workflows Decimal numbers with comma separator was not saved successfully in workflows
00211511	ScriptRowAction in table fired multiple times on iOS
00218734	Virus scanners is blocking the start of Desktop Apps



# Issues resolved: M.App Enterprise 2023 Update 3

Support ticket	Summary
00202596	Actions from ActionSet were randomly sorted in the layer submenu
00201384	Chinese labels not visible in the Desktop App
00191371	"Launch a workflow" code snippet in Dashboard was wrong
00198531	
00194433	Workflow widget in Dashboard shows only the first workflow node
00196182	Redline Text was not editable
00164355	Legend settings were resetted when changing the scale in the Print / Print Preview
00190149	"Pass M.App Authentication Header" was not working as expected
00189003	Merge or Subtract geometries in Redline was not working as expected
00187380	Icon placement of closed Widgets overlaps with menu on the right side
00176618	Certain layers of WMS led to Browser App crash
00174563	SLD area pattern style not supported in Luciad Fusion
00187366	Claims were too strict on Legend Themes
00165025	Invalid legend settings are stored in *.meps files
00162200	Printlayout Editor crashes with "Group elements automatically"
00140712	Action grid localization not working for German
00135099	Dashline alternation configuration not working with metre based styling
00133211	Unable to use HTML tooltips
00023458	Legend icons not updated after switching StyleSet in Desktop Applications
00108829	MyGeoService WFS not working in GeoMedia
00213546	Active Directory enabled tenant doesn't list AD groups (claims) for Action Sets

# Issues resolved: M.App Enterprise 2023 Update 2

Support ticket	Summary
00160988	GetFeatureInfo not shown in the map
00162938	Imported bookmarks don't show redline elements for other users
00161803	Service parameter was missing for WMS
00159620	Zoom factor not working for Geometry Locate in Data table widgets in Dashboard
00159609	Problem with data outside of CRS bounds
00154291	Large amount of images led to significant performance degradation
00152058	MapView with IMAGERY included not working
00151151	"onClick" attribute was cut off in an <img> Tag in Dashboard
00149176	Registered TMS was not showing in Desktop applications
00146940	Embedded video was not working in a Dashboard tooltip
00146670	"lower height" attribute not saved when extruding geometries in Dashboard
00142465	Date widget inside a Compound widget is crashing Dashboard when trying to hide it
00142477	SVG's not showing in Desktop client
00141721	Orthogonal chain dimensioning can't be ended on an intersection of different feature layer
00140251	CSV export was not working with non-ASCII characters
00139068	Shapefile was not working in Dashboard
00137938	Adding the same mapView again led to crash Dashboard
00137942	DateChart buttons disappear after changing styles
00135757	Custom JavaScript was not saved in Dashboard
00133668	Hebrew text badly aligned in some widgets
00133109	DateWidget led to errors in Dashboard
00168077	Changing the Measure Type for Cluster was not working
00131967	Geometries were not showing in the browser but in the desktop client
00130596	WMS tooltips not showing in Dashboard
00126668	Heatmap charts not working as expected
00126947	Underlying line charts of a compound chart appear selectable from within a Tabbed chart widget
00115532	Loading of cached data is leading to errors in Dashboard
00121578	Code snippet "Send a function to another panel" was erroneous
00123927	Chart classification is not working if range is handled with decimal numbers

00122964	"target" attribute is cut off from functional attributes
00122003	Going back to "M.App Enterprise branding / theming" in Motifs was not possible
00121991	Change of font size in Motifs has no effect
00121245	Closed widgets can't be opened again
00121486	Setting Min and Max fields for Equal interval was not working
00119617 00151021	Support of various CRS (EPSG:7855 and EPSG:7854)
00119832	Data outside of CRS bounds can't be imported
00118588	Localized labels are not placed correctly
00118346	Missing help button for title bar
00115490	Metre-based style is not rendered correctly in the legend (Desktop)
00114406	Empty strings are rendered in browser application
00114404	Line geometries are rendered wrong
00111590	Missing horizontal scroll bar in Workflow Editor
00036707	Layer with arcs is not displayed in Dashboard
00023423 00030212 00107854	SVG as external graphics for Styles

## Issues resolved: M.App Enterprise 2023 Update 1

Support ticket	Summary
00023283 00068248	"Fit to layer" not working properly in Dashboard
00025613	Classification / Graduation not respected in Dashboard
00107681	Layer order comes in randomly in Dashboard
00027224 00110959	MAE doesn't logout of 3rd Party Providers
00112160	Measurement is different between 2D / 3D in Dashboard

## Issues resolved: M.App Enterprise 2023

Support ticket	Summary
00023325 00026936	Meter based styling weren't honored in browser-based applications
00023353 00089824	Layer sorting in Feature Analyzer wasn't possible
00023358	Only generic icons in browser-based applications
00023445	Blue circles always appear if a point and polygon symbolizer are combined
00023460	Cached data was not shown in browser-based applications
00023509	HTML charts changed layer order in Feature Analyzer
00023556	Integration of public apps
00025400	Generate within Style Editor manipulates column names in Oracle
00026903	Dataset was not showing in Feature Analyzer because of a wrongly defined EPSG code
00026939	Rotation of text labels are ignored
00048135 00052198	Rework of the error message if wrong parameters/values were defined
00049303 00068006	WMTS capabilities were not displayed in the browser application
00056450	Alignment was not rightfully considered in tooltips
00056469	Connecting to an already existing master/tenant database led to errors
00057908	WMTS was not displayed correctly in browser-based applications
00067774	WMS/WMTS in combination with Feature Analyzer led to strange results
00069471	Assigning vector sets with a different SRID than the app led to errors
00070942	Bottom layers were not rendered in Feature Analyzer
00073913	Halo was not applied correctly respectively set back to black
00080879	Rendering of two-line symbolizers overlapping each other was not rendered correctly
00084217	Style Editor changed field names in filter section always to lower case

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