

# MapStore at *geOcom 2023*

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***GeoSolutions***



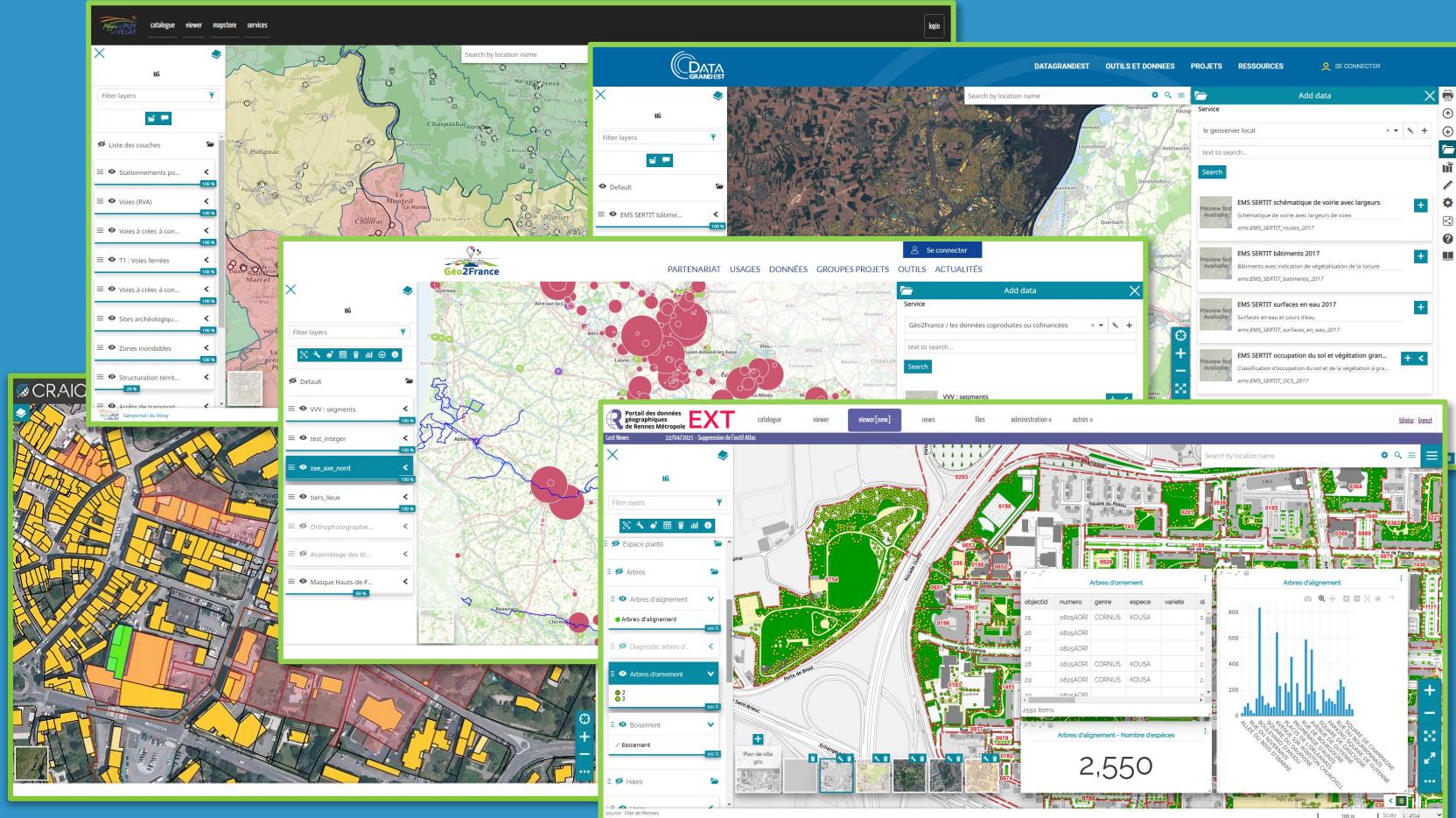
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- What's new in MapStore and for the MapStore integration with geOrchestra
- MapStore and geOrchestra integration roadmaps for 2023

# Who uses MapStore in geOrchestra?

## Some geOrchestra instance using MapStore



A special thanks goes to them for their contribution! 😊



## What's new in MapStore

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# What's new in MapStore

**What has been released in MapStore  
from the last geOcom  
?**

**Two major series in the middle:**

**2022.02 (geOrchestra v23.0)**

Released in Sep 2022 (2 minor releases included)

**2023.01 (compatible with geOrchestra v23.0)**

Released in Apr 2023 (1 minor release included so far the next  
in June 2023)



**Lots of new powerful updates!**

Let's see together the main ones  
interesting for geOrchestra!



## New with 2022.02 - Improved 3D data handling



- Support to WFS layers and imported vector layers (GeoJSON, Shapefile...) in 3D mode
  - Visualization of 2D and 3D Geometries in 3D mode
  - Support to Styling
  - Support to Identify

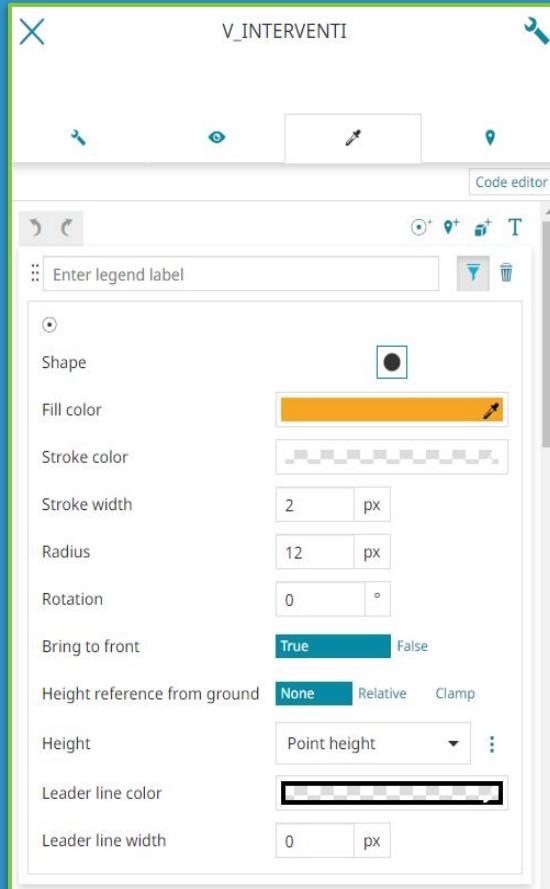


Look at

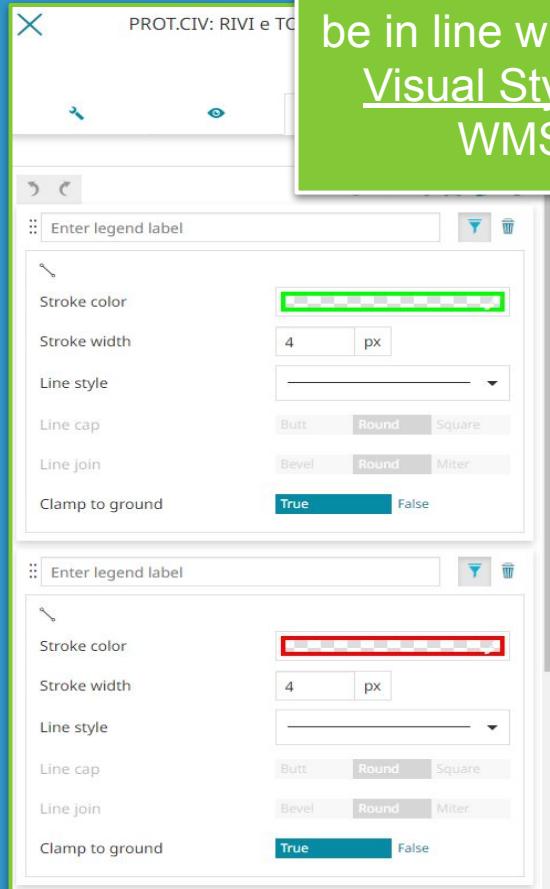
<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/user-guide/layer-settings/#styling-of-vector-layer>



- **Styling properties specific for 3D mode with the inclusion of dedicated symbolizers!**

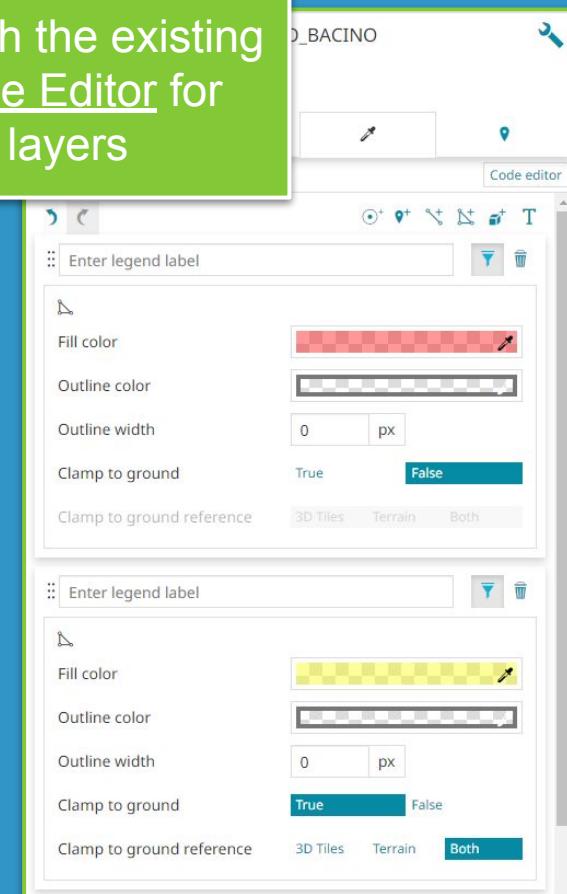


Points



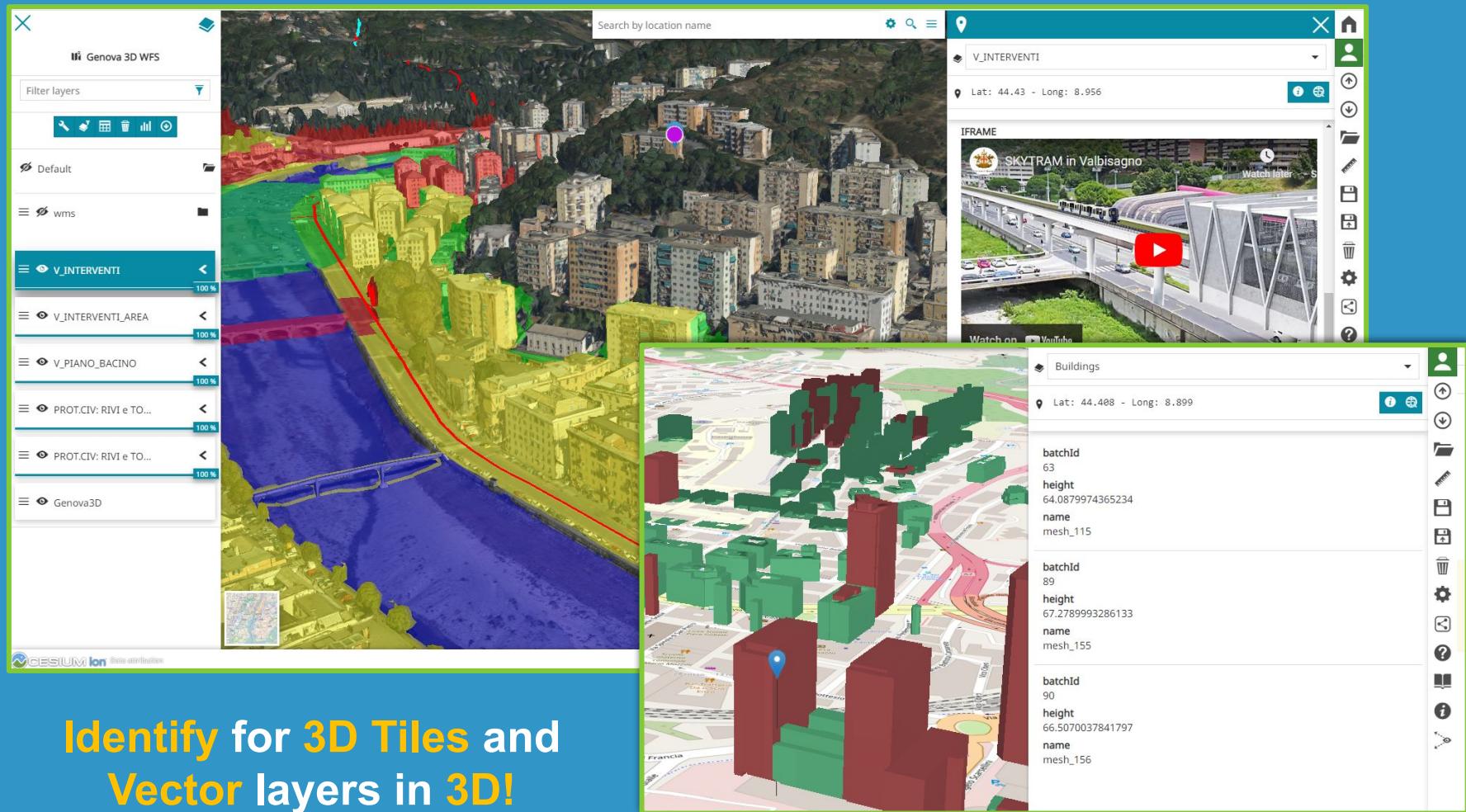
Lines

Normalized the UI/UX to  
be in line with the existing  
Visual Style Editor for  
WMS layers



Polygons

- Enhanced the support for the **Identify** (click on map) in **3D mode** according to the camera orientation

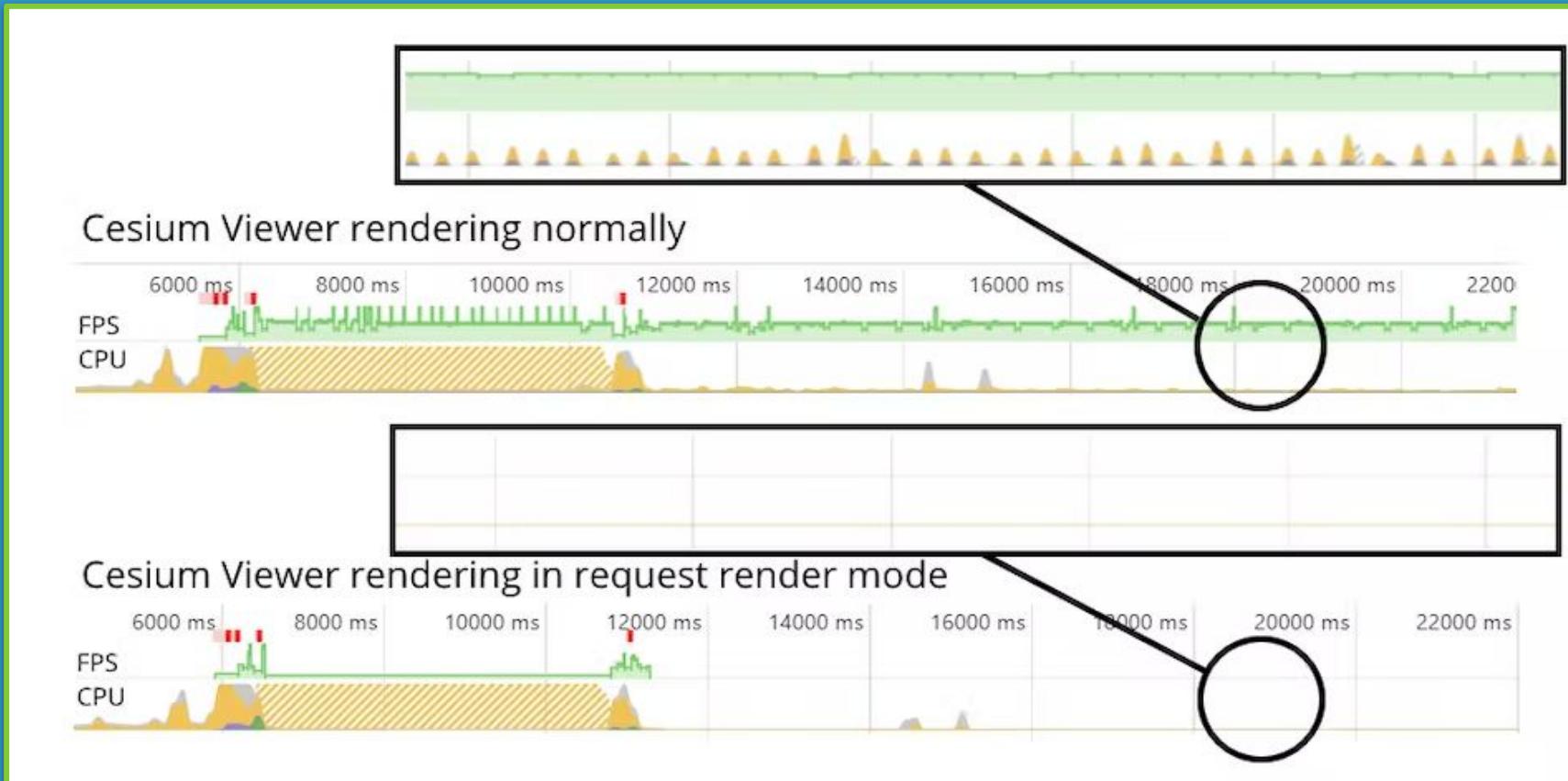


The screenshot displays a complex geospatial application interface. On the left, a sidebar lists various layers: Genova 3D WFS, Default, wms, V\_INTERVENTI (selected), V\_INTERVENTI\_AREA, V\_PIANO\_BACINO, PROT.CIV: RIVI e TO..., PROT.CIV: RIVI e TO..., and Genova3D. The main view shows a 3D perspective of a city area with buildings colored in yellow, green, and red. A river flows through the scene. In the top right, there's a search bar for location names and a coordinate display (Lat: 44.43 - Long: 8.956). Below it is an iFrame showing a video titled "SKYTRAM in Valbisagno". On the bottom right, another 3D view shows buildings with a detailed properties panel listing batchId, height, name, and mesh identifiers for three different batches (batchId 63, 89, 90). The bottom left contains a callout text: "Identify for 3D Tiles and Vector layers in 3D!". The bottom right shows a partial view of a satellite map.

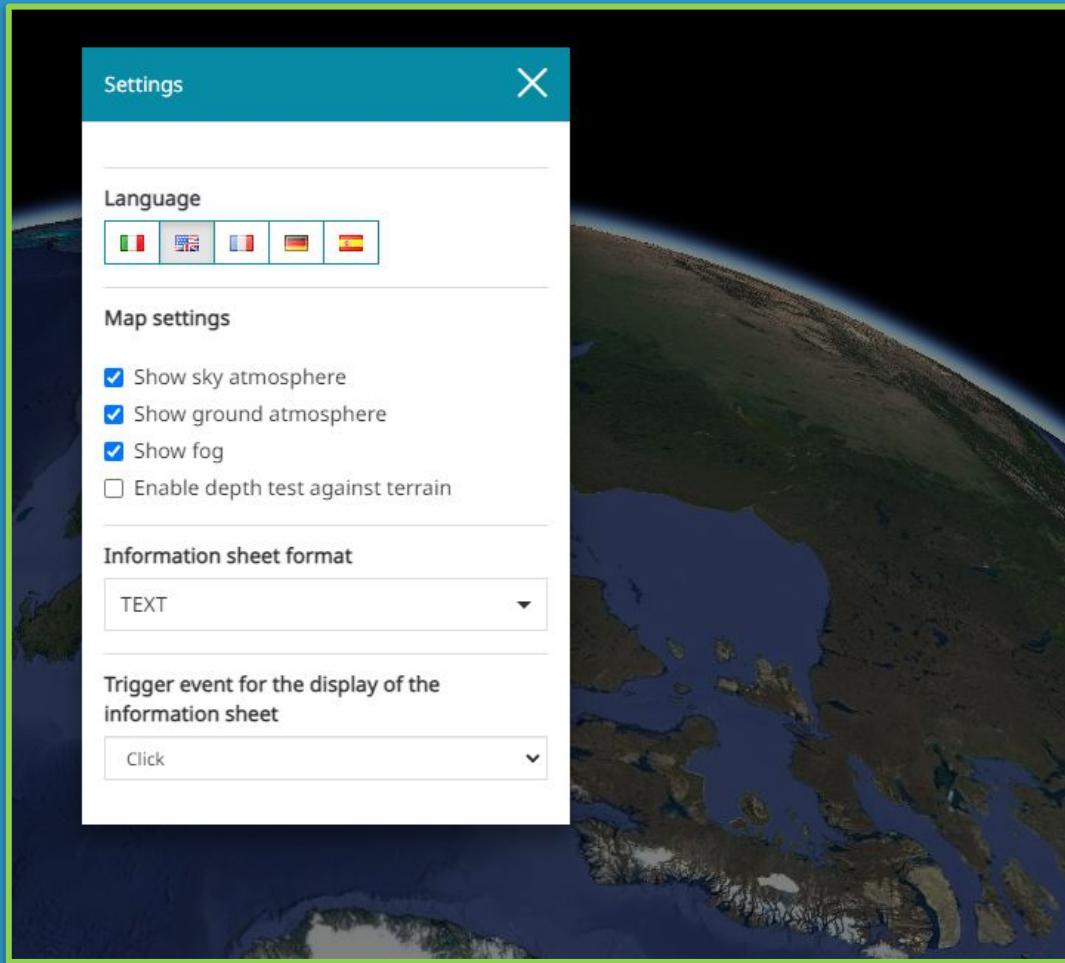
Identify for 3D Tiles and Vector layers in 3D!



- Improved 3D mode performances: applied Explicit Rendering strategy to avoid frames loading when the map is idle



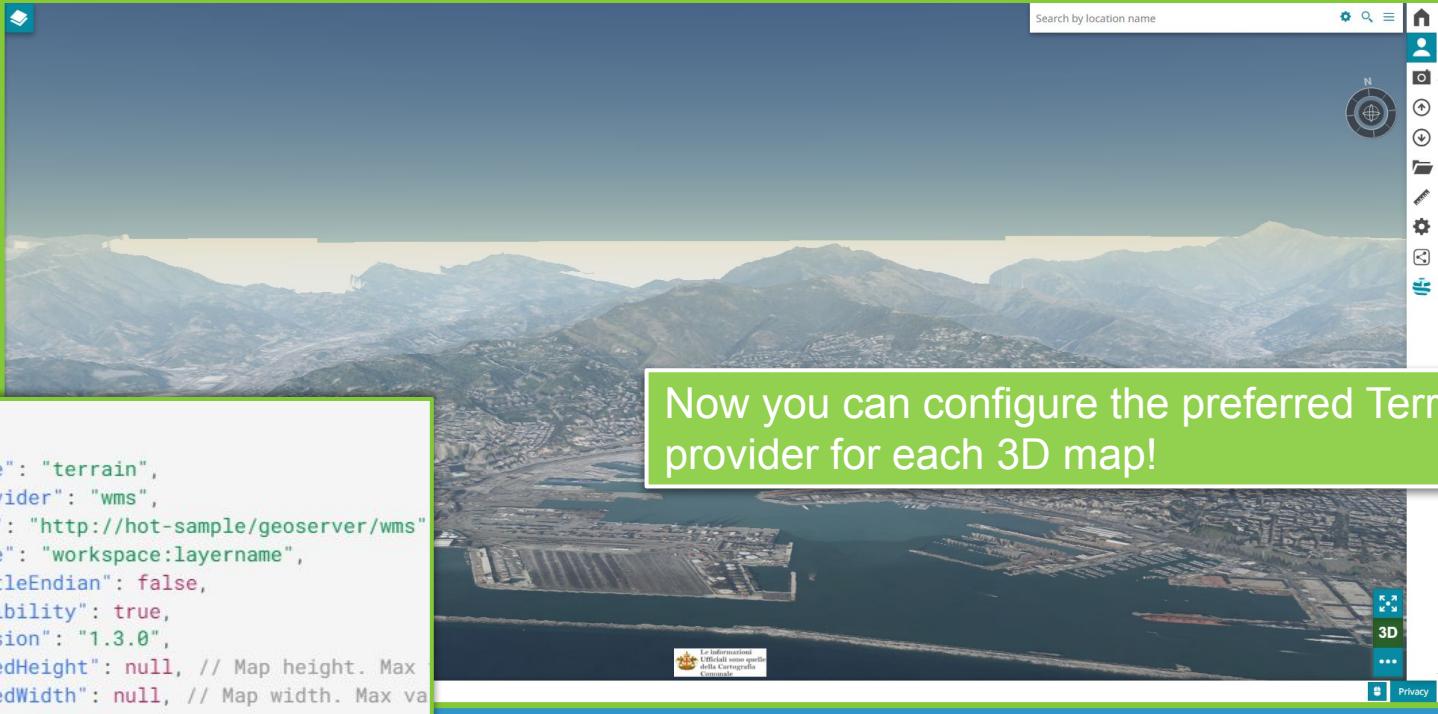
- Improved the **3D Map Options** related to the globe in Map Settings: enable atmosphere, enable fog and enable depth test



## New with 2022.02 - Improved 3D data handling



- Improved the support for Terrain layers including a new dedicated layer type to support terrain provider layer for the 3D viewer



```
{  
    "type": "terrain",  
    "provider": "wms",  
    "url": "http://hot-sample/geoserver/wms",  
    "name": "workspace:layername",  
    "littleEndian": false,  
    "visibility": true,  
    "version": "1.3.0",  
    "fixedHeight": null, // Map height. Max  
    "fixedWidth": null, // Map width. Max va  
    "crs": "CRS:84" // Supports only CRS:84  
}
```

### Look at

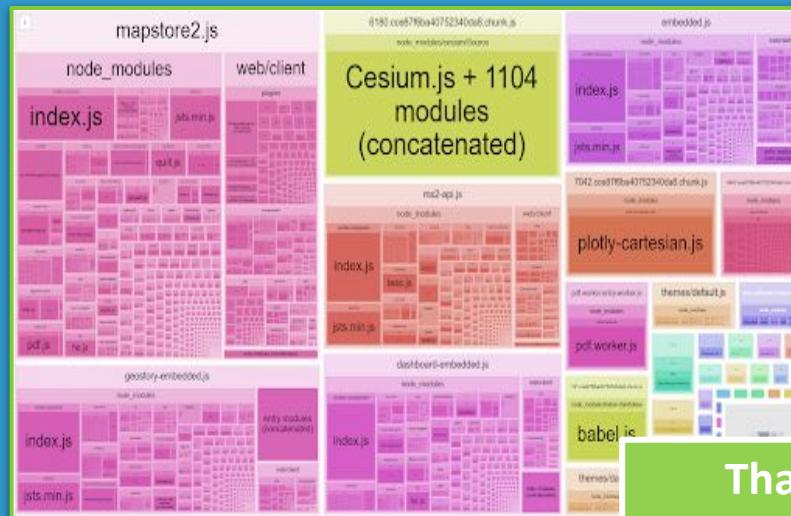
<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/developer-guide/maps-configuration/#terrain>

But... not only updates for 3D!



## New with 2022.02 - Loading Time

- Further performance improvements from [v2021.02](#) concerning the loading time of MapStore pages
  - Reduced the initial MapStore JS bundle size by lazy-loading needed lib dependencies
  - [Modular Plugin](#): for a dynamic import of plugins and extensions only when lib dependencies are needed



2022.01.02

`mapstore2.js` 2.6 Mb



Thanks to Rennes  
Métropole & Co from  
geOrchestra ! 😊



2022.02.02

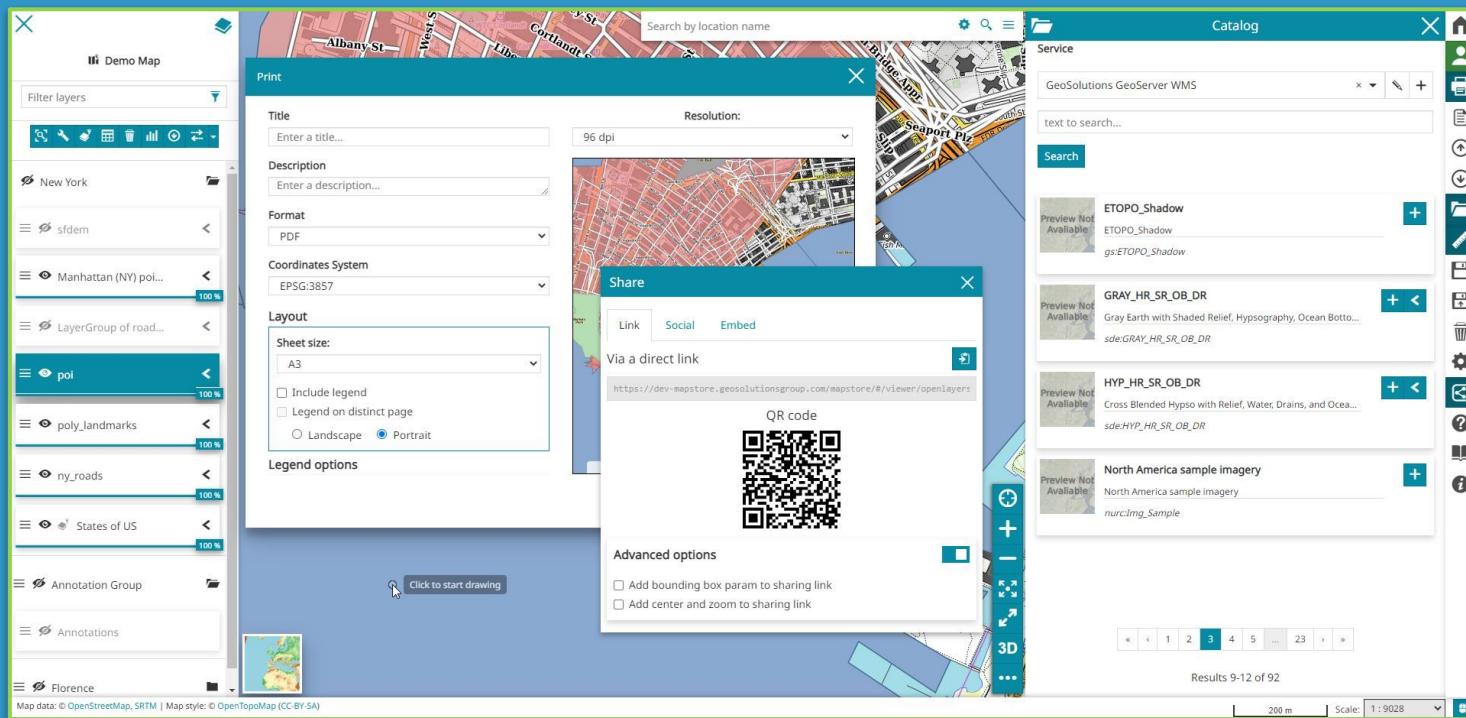
`mapstore2.js` 1.4 Mb



## New with 2022.02 - Side Toolbar



- **Side Toolbar:**
  - A new design for the MapStore map viewer
  - Faster and easier access to MapStore tools
  - Allows concurrent use of multiple tools on the same map



Thanks to Rennes Métropole & Co from geOrchestra ! 😊

## New with 2022.02 - Query params handling

- First implementation in v2022.01.01 series
  - Provided the ability to send query params using POST
- Enhanced in v2022.02.00
  - Support to multiple embedded maps on the same web page via POST
- Enhanced respectively in v2022.02.01 and v2022.02.02
  - Provided support for a simplified handling of query parameters
  - Support of query params for 3D mode

More documentation available online at:

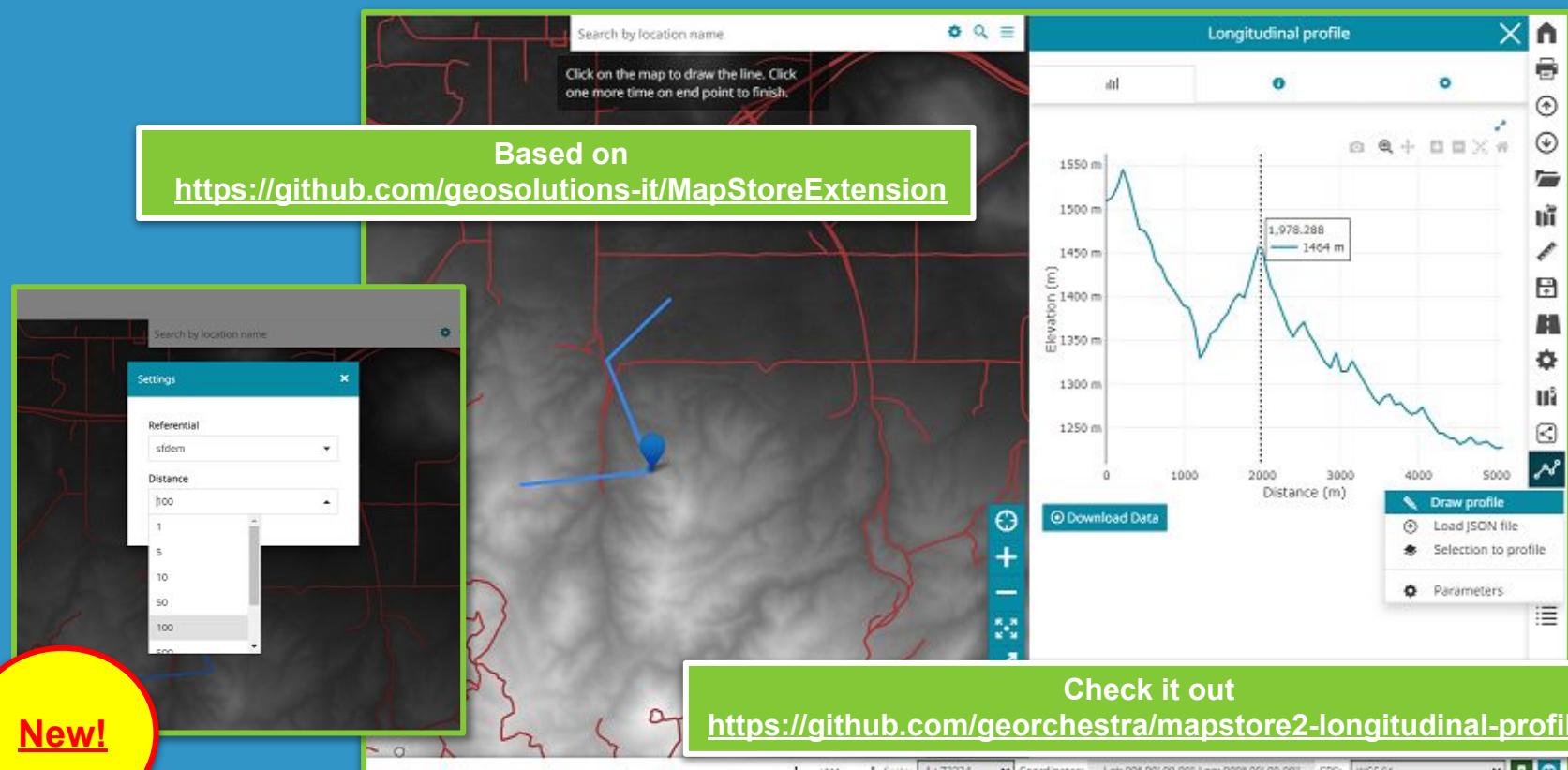
[https://docs.mapstore.geosolutionsgroup.com/en/v2\\_023.01.01/developer-guide/map-query-parameters](https://docs.mapstore.geosolutionsgroup.com/en/v2_023.01.01/developer-guide/map-query-parameters)

### Example

[https://mapstore.geosolutionsgroup.com/mapstore/#/viewer/openlayers/new?adLayers=gs:us\\_states&center=-106.458,45.699&zoom=5&mapInfo=gs:us\\_states&mapInfoFilter=STATE\\_FIPS=30](https://mapstore.geosolutionsgroup.com/mapstore/#/viewer/openlayers/new?adLayers=gs:us_states&center=-106.458,45.699&zoom=5&mapInfo=gs:us_states&mapInfoFilter=STATE_FIPS=30)

Thanks to Rennes Métropole & Co from geOrchestra ! 😊

**The Longitudinal Profile Extension:** new MS tool released in Q4 of 2022 to provide a longitudinal profile visualization for MapStore in geOrchestra (based on the [WPS](#) provided by [Le Puy en Velay](#))



Thanks to Rennes Métropole & Co from geOrchestra ! 😊



## And... what about 2023.01 ?



### Check it out on Github

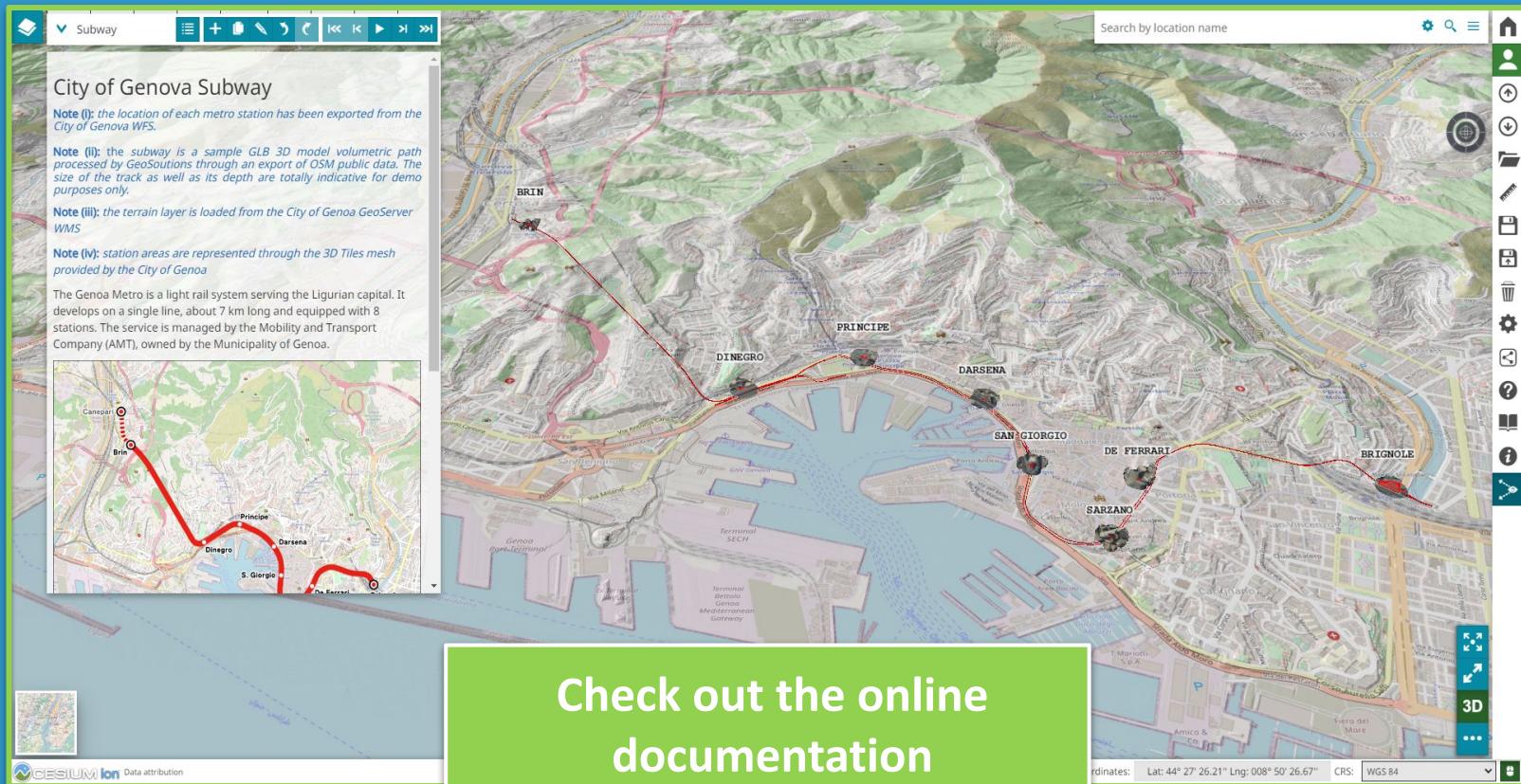
<https://github.com/geosolutions-it/MapStore2/releases/tag/v2023.01.00>

<https://github.com/geosolutions-it/MapStore2/releases/tag/v2023.01.01>



## New with 2023.01 - Map Views

- Create your **immersive experience** within the **MapStore Viewer** using the new powerful [Views Tool](#)!



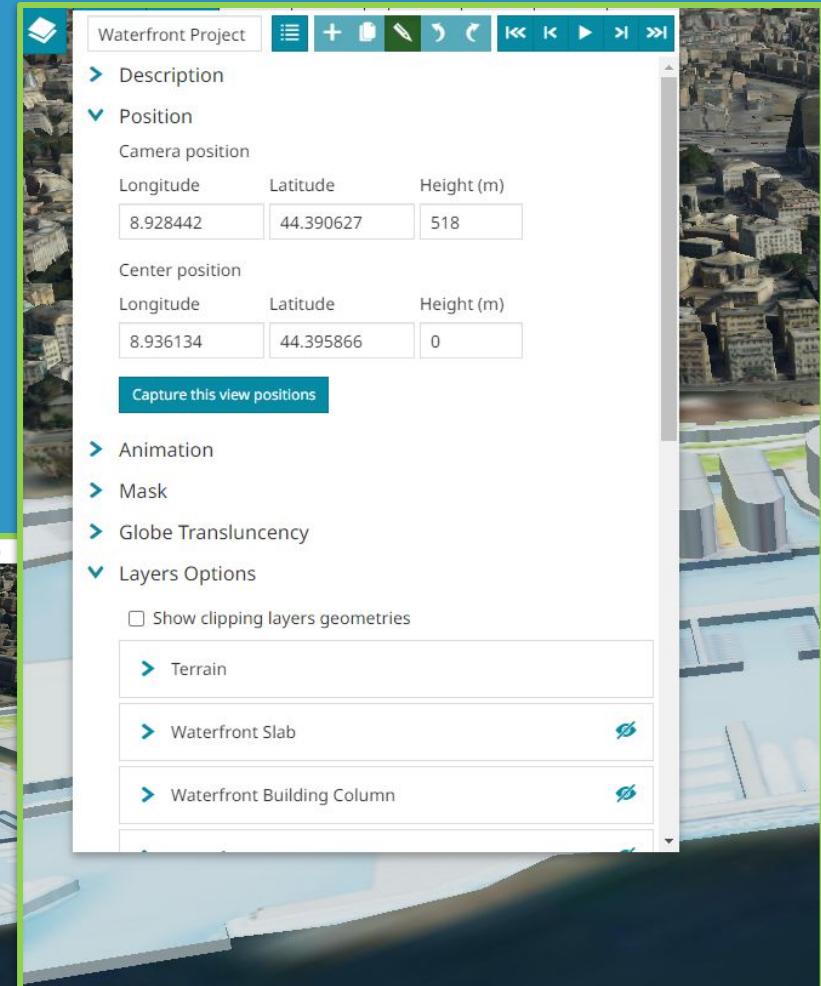
<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/user-guide/map-views/>

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## New with 2023.01 - Map Views



- Configuring different custom views within the same map **is now possible!**
  - Descriptive panel
  - Map position and camera orientation
  - Animation time
  - Custom layers visibility
  - More options for 3D!



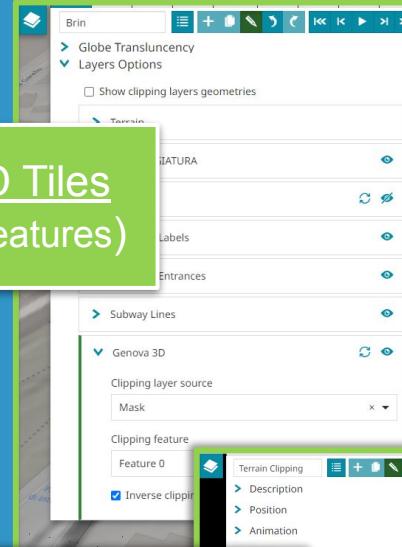


## New with 2023.01 - Map Views



- Additional and advanced options are available for the 3D mode

Clip and Mask of 3D Tiles  
(using WFS or Vector features)



Globe Translucency



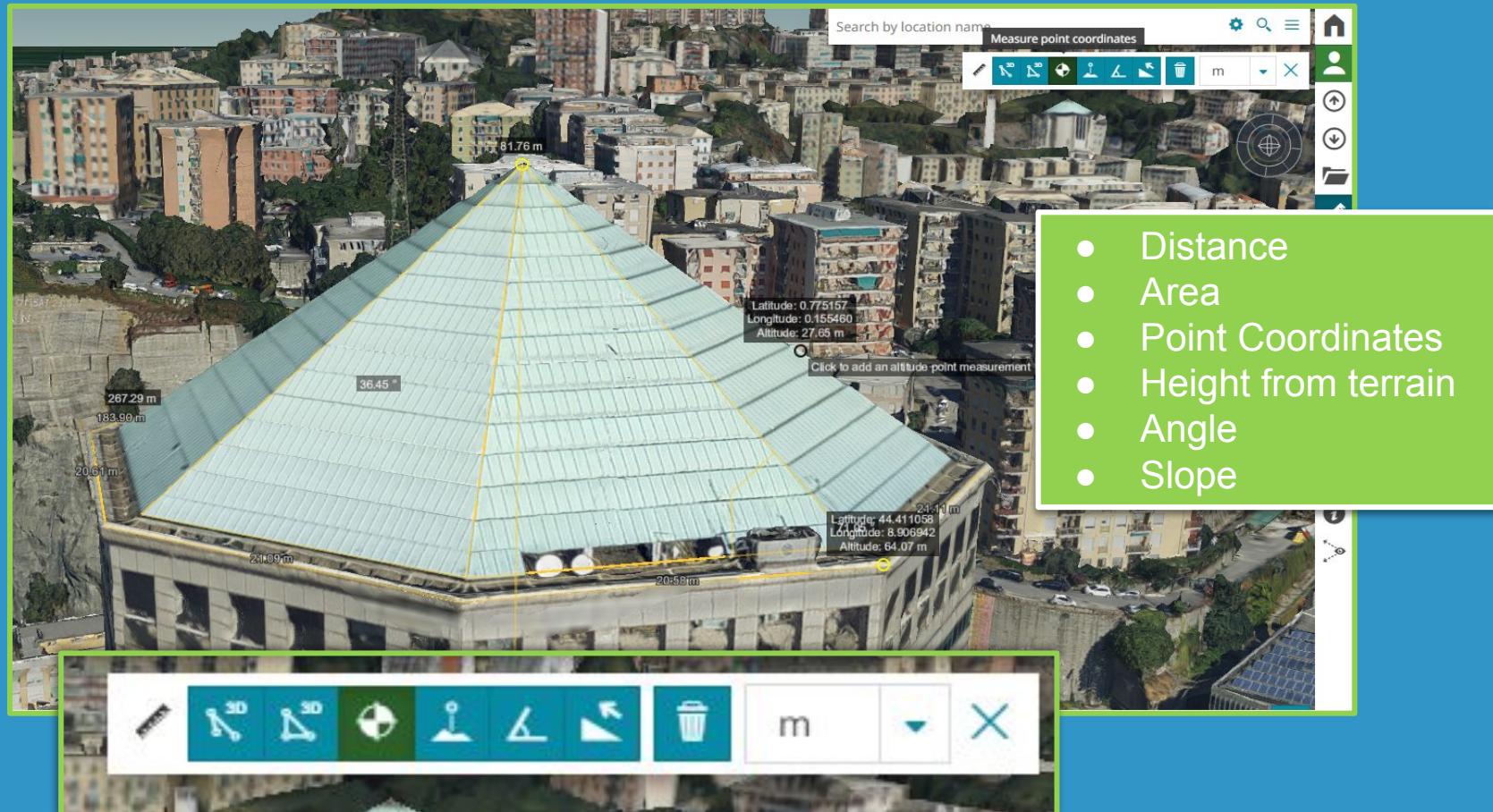
Clipping of Terrain Layers



## New with 2023.01 - 3D Measurement



- The **Measurement tool** is now supported also in 3D mode



A completely **new design** provides a Measurement tool more compact and flexible to improve also the **UX**!

## New with 2023.01 - 3D Styling



- Leader line property to connect a marker, 3D model, icon or text to the terrain

The screenshot displays the GeoSolutions map application interface. On the left, a configuration dialog box titled "Code editor" is open, showing settings for a 3D model. The settings include:

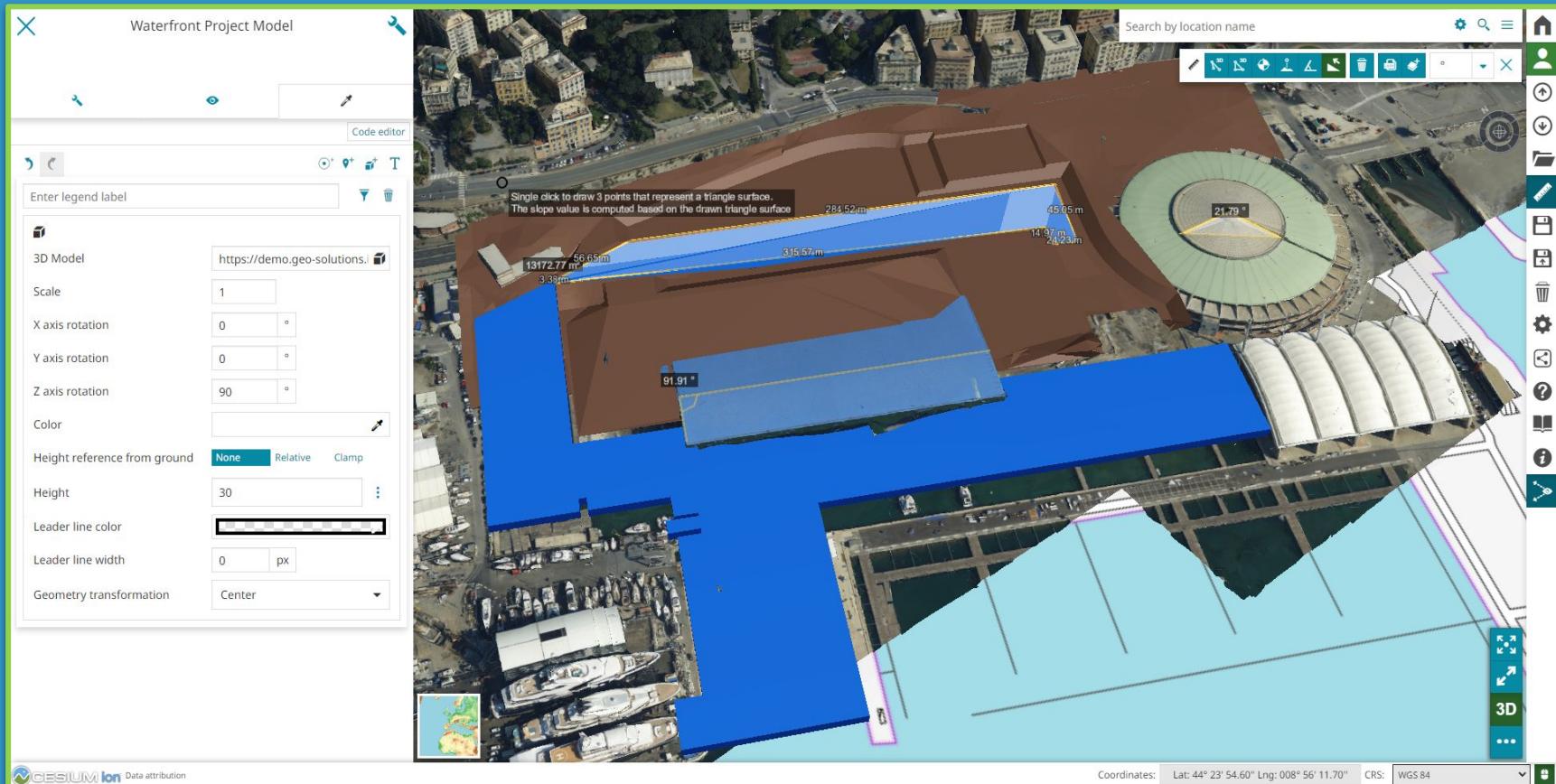
- 3D Model: https://demo.geo-solutions.it
- Scale: 1
- X axis rotation: 0
- Y axis rotation: 0
- Z axis rotation: 0
- Color: A color picker set to black.
- Height reference from ground: None (selected), Relative, Clamp
- Height: Point height
- Leader line color: A color picker set to black.
- Leader line width: 3 px
- Geometry transformation: Center

To the right of the dialog is a 3D map view showing several 3D models (a blue pyramid and two orange spheres) connected by leader lines to specific locations on the terrain. An inset map provides a closer look at a industrial area with red leader lines extending from the 3D models to specific buildings and infrastructure. The application interface includes a search bar, a toolbar with various icons, and a legend.

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## New with 2023.01 - 3D Styling

- 3D Models support as a new Point Symbolizer type



Based on glTF model support (raw GLB is also supported)

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## New with 2023.01 - WFS/Vector Legend

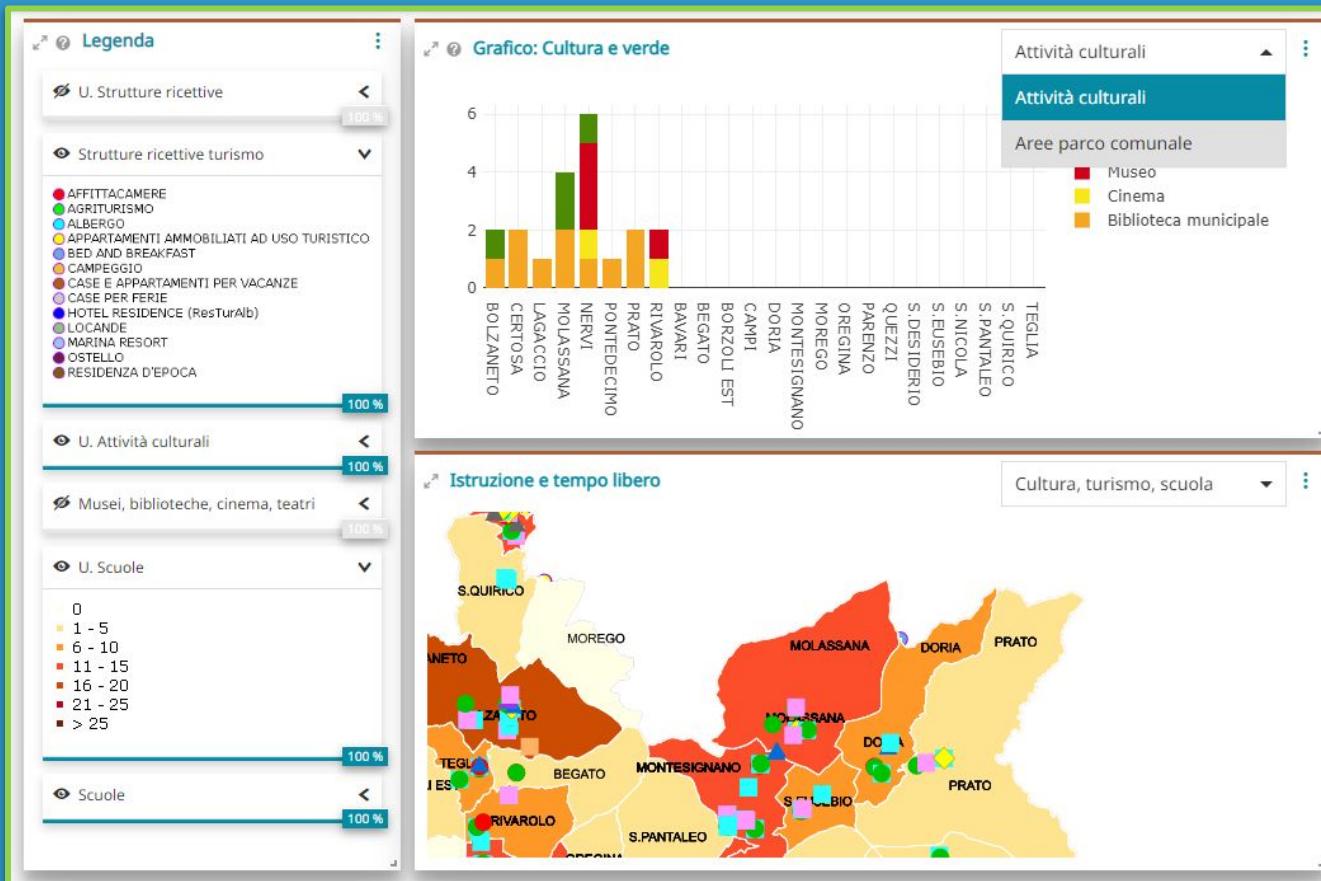


- Layer items in TOC will show the legend for WFS and vector layers when a style has been defined



## New with 2023.01 - Dashboards

- **Chart Switcher/Map Switcher:** to allow switching between multiple charts and maps respectively using a single widget
- **Legend widget improved:** to make it interactive and more responsive



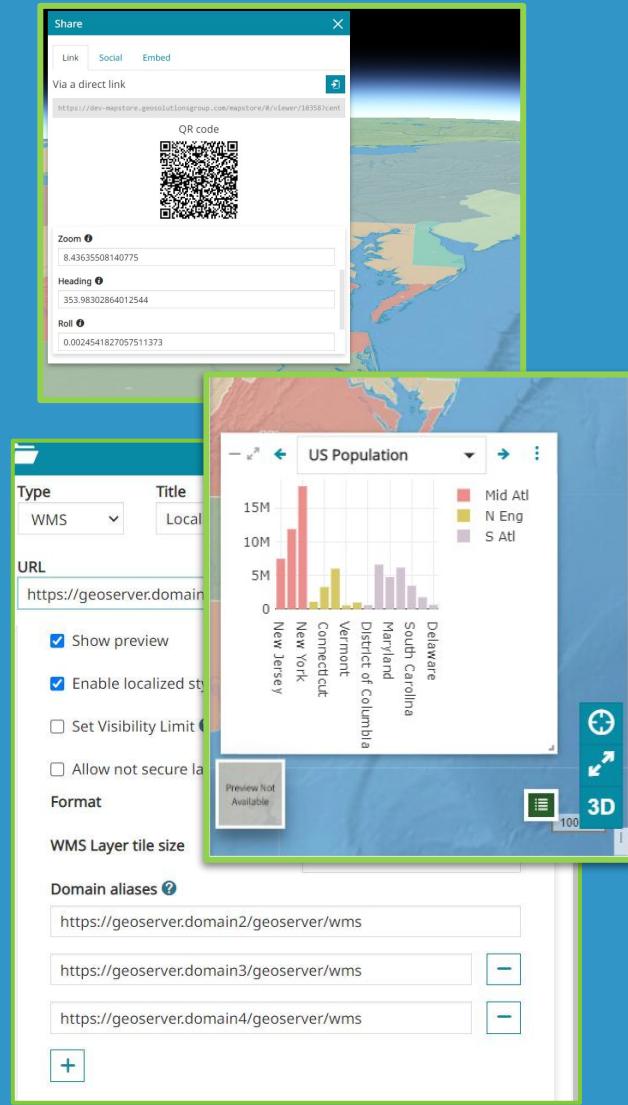


# What's new in MapStore



Lots of other enhancements to the existing MapStore capabilities have been also included

- Improved interoperability with services other than GeoServer (**Server Type** option and **more**)
- ... and allow to load 3D Tiles tilesets via query parameters (THANKS to CRAIG! 😊)
- Filter by **viewport** in Attribute Table
- Improved **responsiveness** for MS widgets in mobile
- Ability to set **domain sharding** directly from the Catalog component
- **3D zoom via share URL** now supports the **camera orientation**
- Client side customization for **WMTS background layers attributions**
- ...and much more. Check out the [releases page](#) in Github to learn more!



# Ongoing work - geOrchestra



For the **geOrchestra integration** we are working on some new interesting features that will land in

**MapStore**  
and  
**mapstore2-georchestra**

**THIS YEAR!**



Thanks to Rennes Métropole & Co from geOrchestra ! 😊



## Ongoing work - geOrchestra



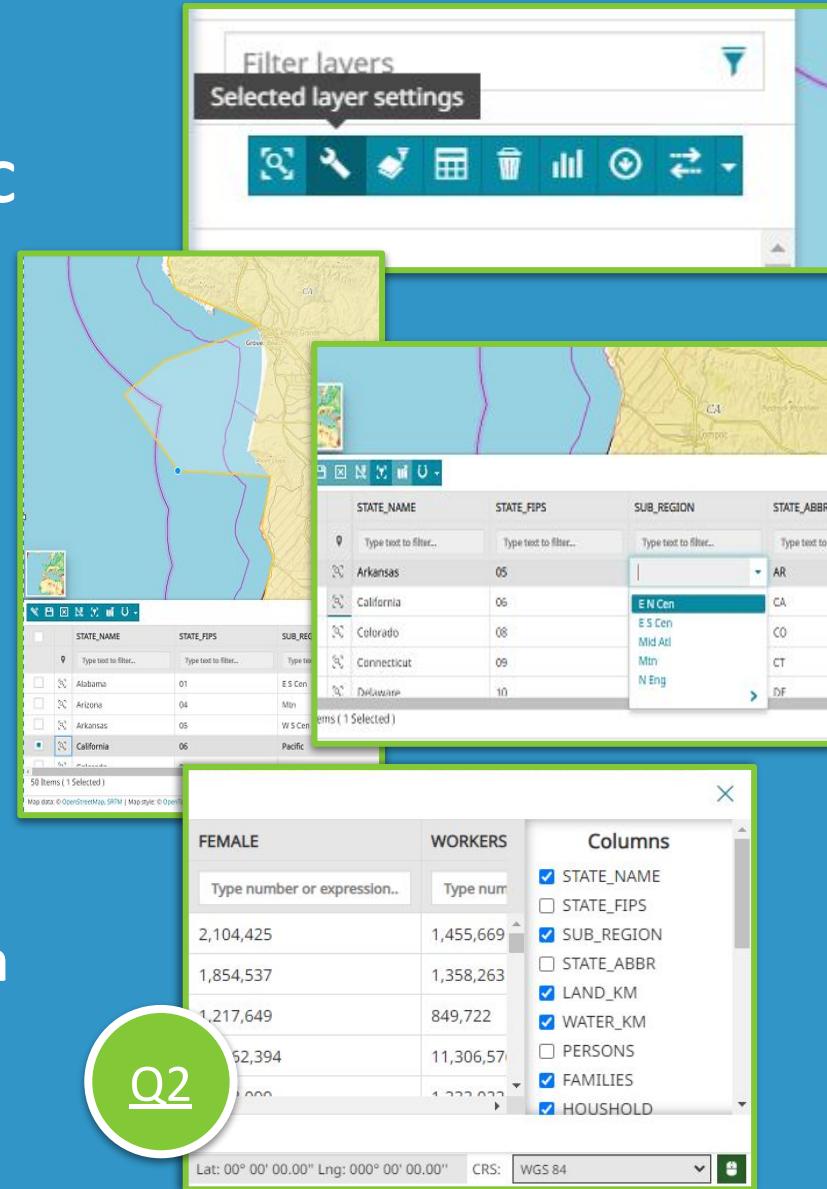
- Update to MapStore 2023.01:
  - The mapstore2-georchestra downstream project will be updated to the latest version of MapStore 2023.01.xx

The screenshot displays the geOrchestra interface, which is a powerful geospatial web application. It features a main map view with several 3D models (orange spheres) and a 3D terrain base. A legend on the left shows categories like 'Waterfront' and '3D Tile mesh provided by the Municipality of Genoa'. Below the map is a toolbar with icons for 3D rotation, zoom, and other functions. To the right, there's a histogram titled 'US Population' showing data for states like New York and California. At the bottom, there are two smaller windows: one showing a legend for 'Strutture ricettive turistiche' and another showing a bar chart for 'Grafico: Cultura e verde'. A large green circle in the bottom right corner contains the text 'Q2'.

All new features of MapStore 2023.01 will be available in geOrchestra soon!

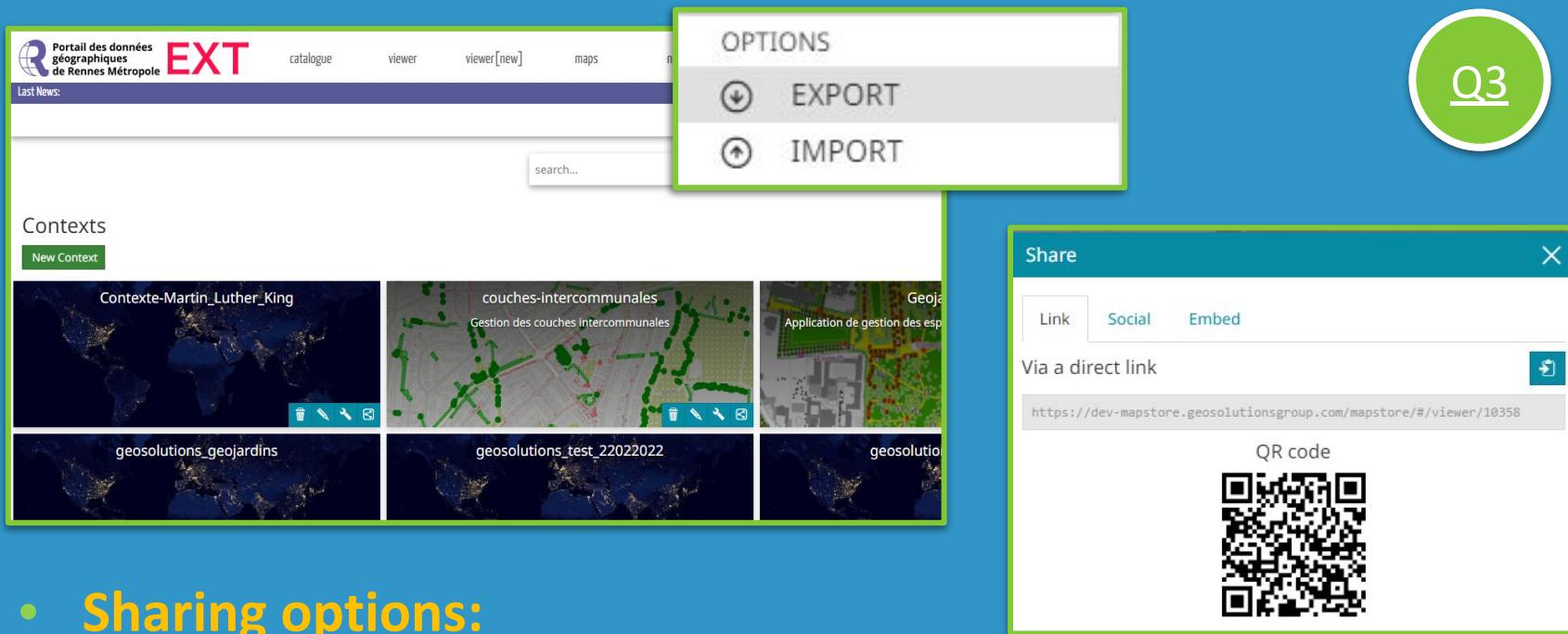
## Ongoing work - geOrchestra

- **Attribute Table:**
  - Ability to disable editing functions for layers in TOC (read-only layers)
  - Restrict editing functionalities only to certain MS groups (geOrchestra roles)
  - Keep the state of the UI column visibility settings when **saving a map** and in **user session**



## Ongoing work - geOrchestra

- Application Context:
  - Import/export tool will be available for MapStore Contexts as it is for Maps, Dashboards and GeoStories



The screenshot shows the MapStore interface. On the left, there's a grid of map thumbnails labeled 'Contexts'. One thumbnail is highlighted with a green border. A context menu is open over this thumbnail, showing options 'OPTIONS', 'EXPORT', and 'IMPORT'. To the right of the grid, a 'Share' dialog box is open. It contains tabs for 'Link', 'Social', and 'Embed', with the 'Link' tab selected. It shows a direct link: <https://dev-mapstore.geosolutionsgroup.com/mapstore/#/viewer/10358>. Below the link is a QR code.

Q3

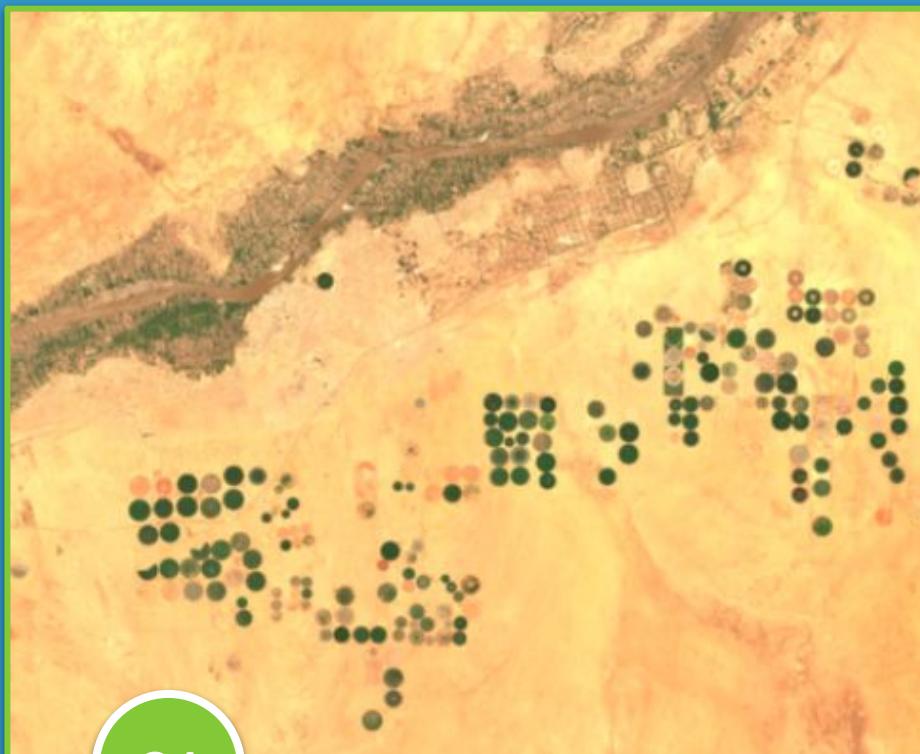
- Sharing options:
  - Share tool enhancement for creating permalinks so that it will be possible to share the exact state of the map without saving it



## Ongoing work - geOrchestra



- Cloud Optimized GeoTIFF (COG):
  - The support for a new source type will be included in MapStore Catalog tool ...
- Efficient Imagery Data Access:
  - Only the data you need
  - Improving scalability and reducing bottlenecks
- Reduced Data Duplication:
  - Data available online for all consumers
- Many Providers:
  - eg. S3, Google Cloud Storage, Azure



... to be in line with many software already using it!

# Ongoing work - MapStore

We are actively working on interesting new features and improvements for existing and new tools to be available in next releases!

The MapStore community is also growing a lot,  
Thank you all for using MapStore!



## Ongoing work - Even more on 3D

- Further updates to align the **3D measurement** capabilities to the one available in **2D**:
  - Export to **GeoJSON**
  - Convert measurements to **Annotation**
  - Convert measurements to **vector layer in TOC**



- **Map type** and **camera orientation** persisted when saving a map
- Features editing support for **3D** (also for **Annotations**)
- **CesiumJS update** to the last version (to support **3D Tiles** version 1.1)

Q3

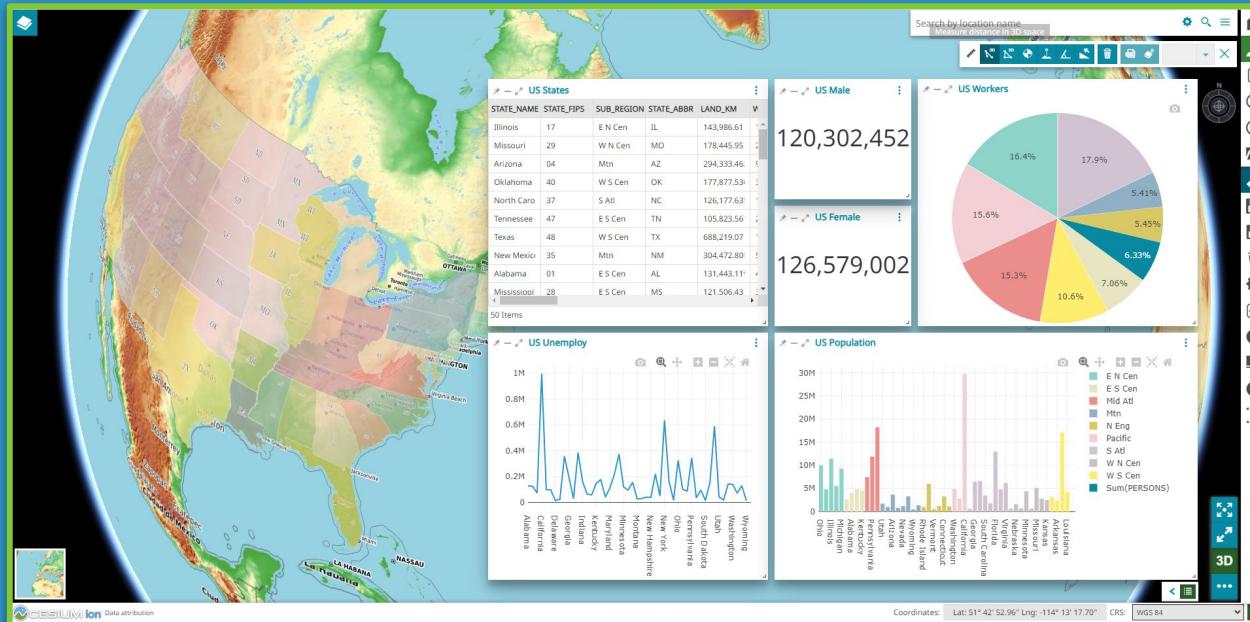
Q3

Q4

Q3

## Ongoing work - Even more on 3D

- MapStore Widgets available also in 3D mode!



- Experimentation on possible performance improvements for **Terrain layers** rendering:
  - BIL Terrain caching server side and GeoServer enhancements on DDS/BIL format
  - Terrain layer served with static quantized-mesh

Q4

## Ongoing work - Even more on 3D

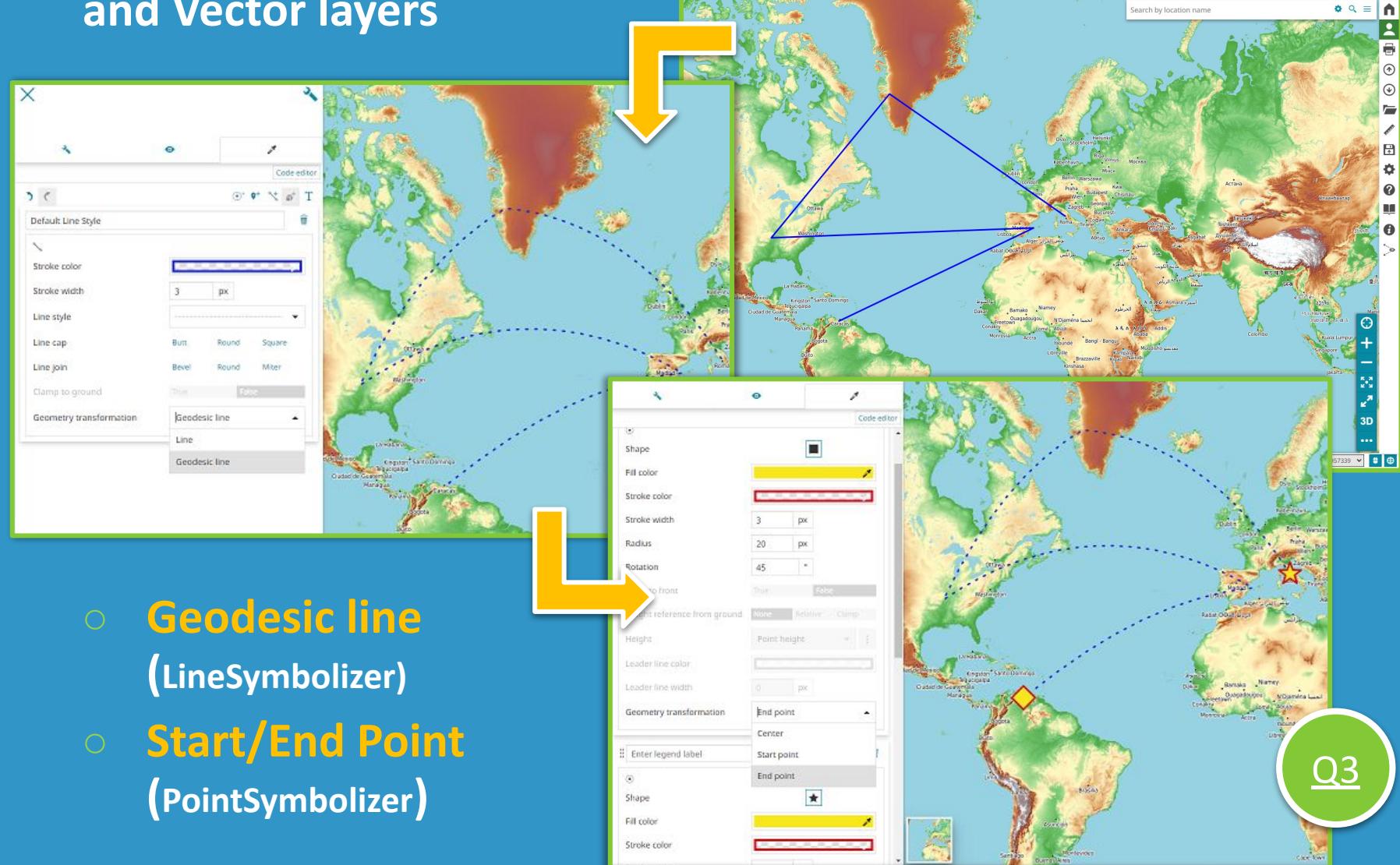


- Support of 3D maps also in Dashboards and GeoStories!

The collage illustrates various applications of 3D mapping technology:

- Top Left:** A 3D globe showing US state boundaries, titled "States Map".
- Top Right:** A dashboard interface showing a 3D globe and a media library with items like "Demo Map" and "NPA Demo Map".
- Middle Left:** Two charts: "Persons" (line graph) and "Water Km" (bar chart) overlaid on a map of the United States.
- Middle Right:** A dashboard with a 3D globe, a media library, and a detailed view of the Mauna Kea Observatory.
- Bottom Left:** A 3D globe showing a specific location with an inset image of the Mauna Kea Observatory.
- Bottom Right:** A circular icon containing the text "Q3".

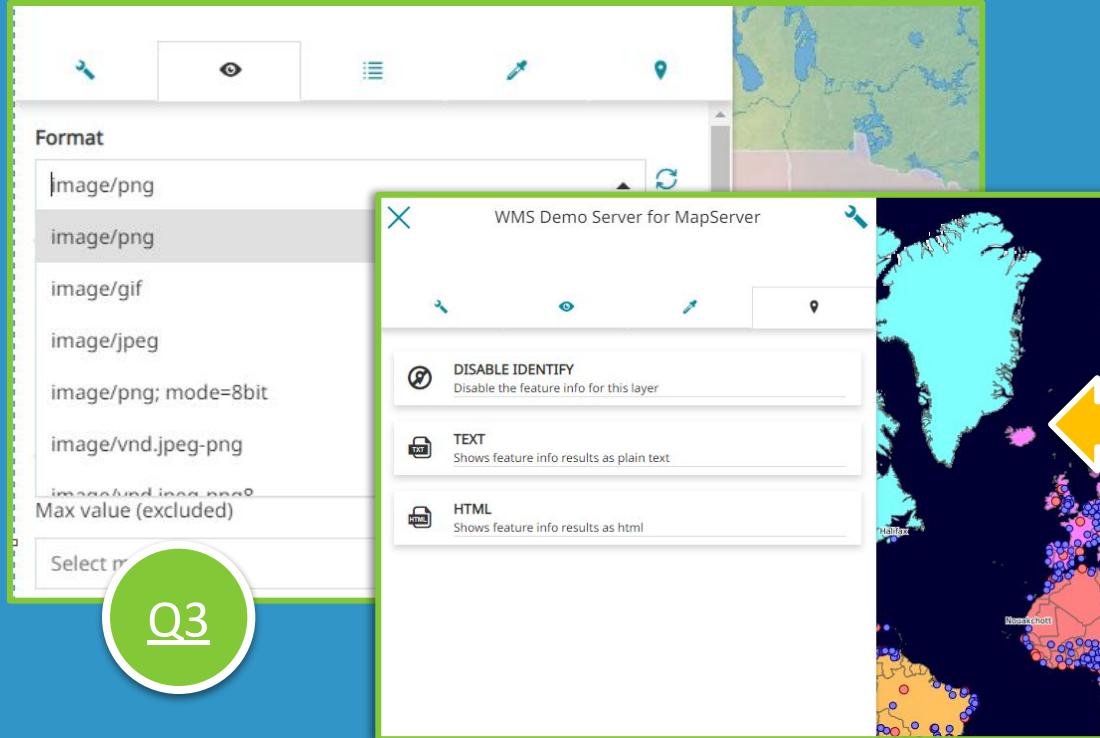
- **Geometry Transformations in Visual Style Editor for WFS and Vector layers**



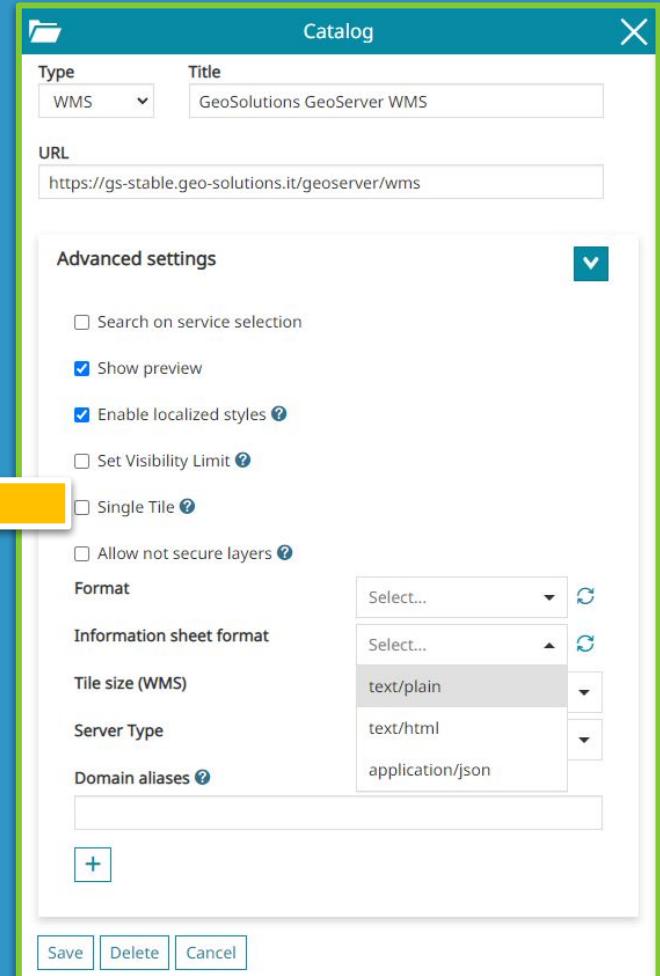
## Ongoing work - More for the Interoperability



- Improved the **Interoperability** with OCG compliant services other than GeoServer
  - Better handle of **GetMap** and **GetFeatureInfo** format list in Catalog and Layer Settings from WMS services



The screenshot shows a map interface with a sidebar for 'Format' options. A green circle with 'Q3' is overlaid on the sidebar. An inset window titled 'WMS Demo Server for MapServer' displays three options: 'DISABLE IDENTIFY', 'TEXT', and 'HTML'. A yellow arrow points from the 'HTML' option in the inset to the 'HTML' option in the 'Format' list on the left.



The screenshot shows the 'Catalog' dialog box for a 'WMS' service. The 'Title' is 'GeoSolutions GeoServer WMS' and the 'URL' is 'https://gs-stable.geo-solutions.it/geoserver/wms'. Under 'Advanced settings', 'Show preview' is checked. The 'Format' section shows 'text/plain' selected. Other sections include 'Information sheet format', 'Tile size (WMS)', 'Server Type', and 'Domain aliases'.

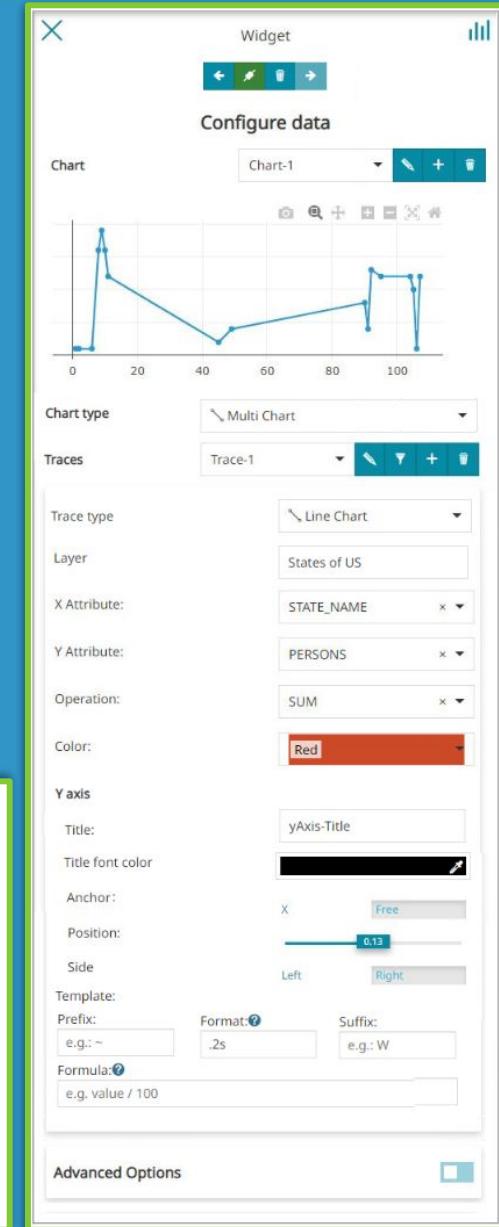
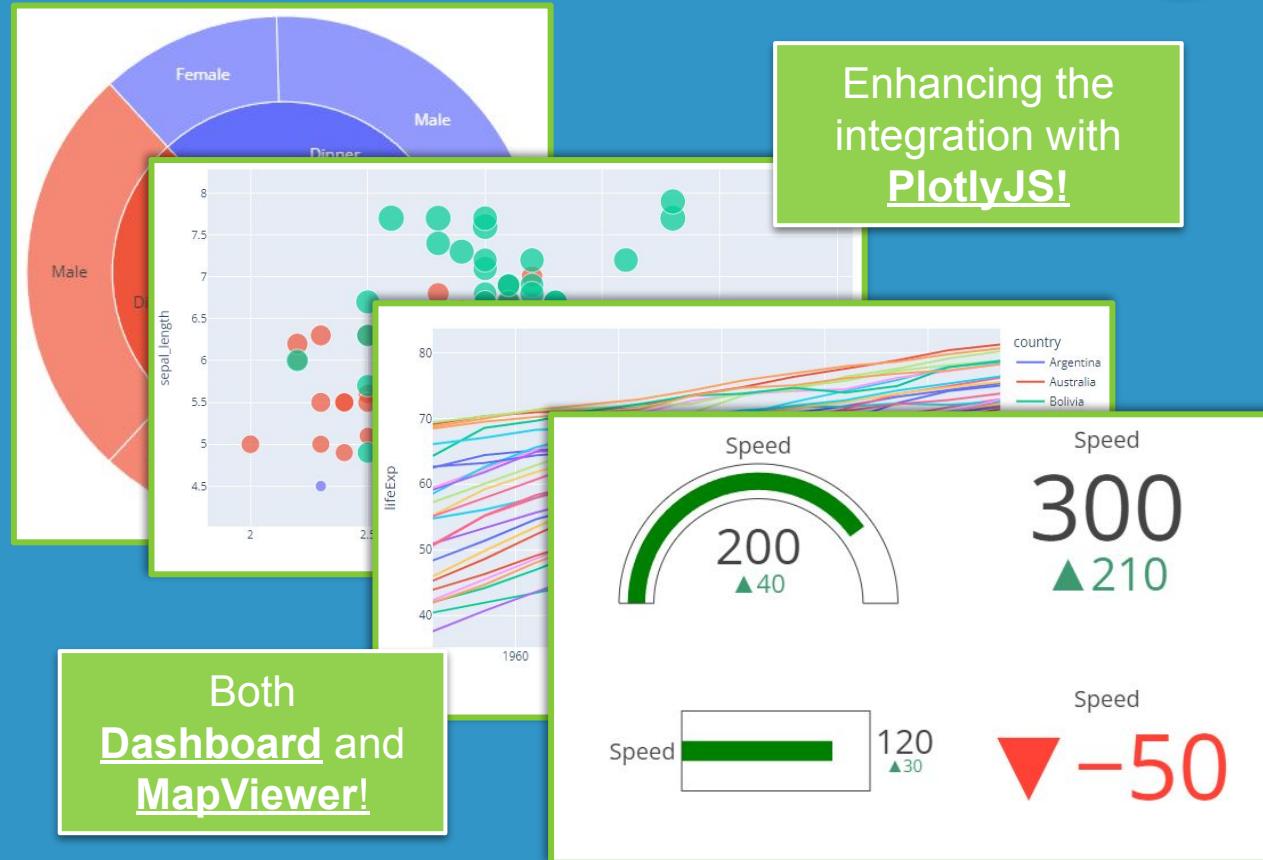
A special thanks goes to CRAIG for the effective cooperation! 😊

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## Ongoing work - Charts

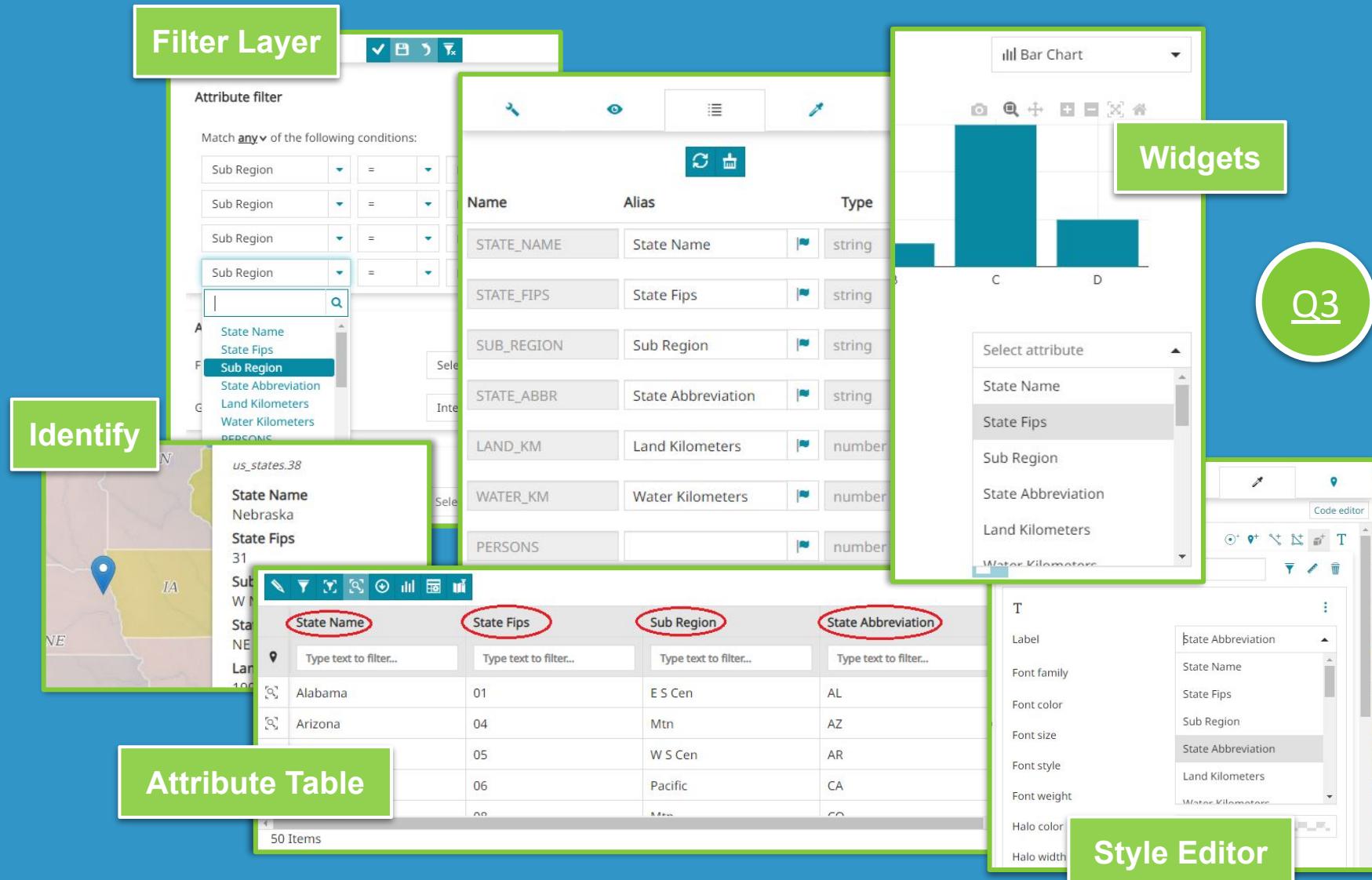
- MapStore Charts will be improved:
  - Multiple variable charts
  - Additional chart types
  - More configuration options

Q4



# Ongoing work - Aliases

- Manage Feature Attributes Aliases across MapStore tools



The screenshot illustrates the MapStore interface with several components highlighted:

- Filter Layer**: A panel for defining attribute filters, showing conditions like "Sub Region = Sub Region".
- Identify**: A map view showing a location in Iowa (IA) with a callout showing attribute details: State Name (Nebraska), State Fips (31), Sub Region (NE), State Abbreviation (NE), Land Kilometers (100), Water Kilometers (0), and Persons (31).
- Attribute Table**: A table showing state data with columns: State Name, State Fips, Sub Region, and State Abbreviation. The first two columns are circled in red.
- Style Editor**: A panel for styling features, listing attributes: State Abbreviation, State Name, State Fips, Sub Region, State Abbreviation, Land Kilometers, Water Kilometers, and Halo width.
- Widgets**: A panel displaying a bar chart titled "Bar Chart" comparing categories C and D.
- Q3**: A circular icon labeled "Q3".



## Ongoing work - Google Photorealistic 3D Tiles



- **Google Photorealistic 3D Tiles**: ongoing experiments on MapStore DEV are giving really good results with this!

The Google Photorealistic 3D Tiles map

This demo map is intended to provide an overview of some cities around the world using the **Photorealistic 3D Tiles** released by Google as part of Google I/O 2023 series.

Photorealistic 3D Tiles - Lower Manhattan

This is possible thanks to **MapStore** developments in 3D functionality performed during the last year, including the ability to use **3D Tiles** in maps (such as the Photorealistic 3D Tiles) and the **Map View** tool through which it is possible to set up multiple map views and navigate between them.

Q3

Paris

Paris is the capital and most populous city of France, with an official estimated population of 2,102,650 residents as of 2023 in an area of more than 105 km<sup>2</sup> (41 sq mi). Since the 17th century, Paris has been one of the world's major centres of finance, diplomacy, commerce, fashion, gastronomy, and science.

Paris is especially known for its museums and architectural landmarks. The Louvre received 7.8 million visitors in 2022, keeping its position as the most-visited art museum in the world. The Musée d'Orsay, Musée Marmottan Monet and Musée de l'Orangerie are noted for their collections of French Impressionist art.

CESIUM Ion Goog

Still Experimental (Pre-GA Offerings)

Check it out!

<https://dev-mapstore.geosolutionsgroup.com/mapstore/#/context/MapStorePhotorealistic3DTiles/44034>

CesiumJS version updated to **1.91.0**!

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Check out the updated **User and Developer** guides of  
the last MapStore release  
v2023.01.01

<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/user-guide/>

<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/developer-guide/>



## More Info - Online resources

- **Demo site:** <https://mapstore.geosolutionsgroup.com>
- **User documentation:**  
<https://mapstore.readthedocs.io/en/latest/user-guide/home-page/>
- **Developers documentation:**  
<https://mapstore.readthedocs.io/en/latest/developer-guide/requirements/>
- **GitHub Repo:** <https://github.com/geosolutions-it/MapStore2>
- **Youtube Videos:**  
[https://www.youtube.com/playlist?list=PLe2yzutVrnZ5tjYGYcKmZzo\\_M9ku5I9X](https://www.youtube.com/playlist?list=PLe2yzutVrnZ5tjYGYcKmZzo_M9ku5I9X)
- **Mailing Lists:** <https://groups.google.com/g/mapstore-users>  
<https://groups.google.com/g/mapstore-developers>



# That's all folks!



## Questions?

*[info@geosolutionsgroup.com](mailto:info@geosolutionsgroup.com)*