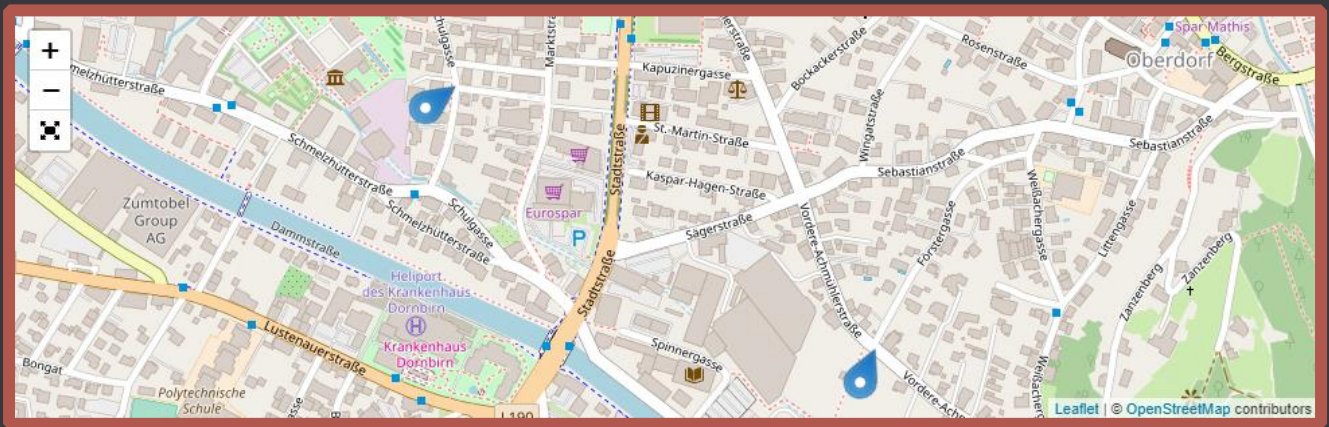


Maps for fleet tracking



Senseforce Rocket update 1.5.7 provides a great new tool for fleet management: Maps. Track the position of your whole fleet by displaying your machinery on their according positions. Use the interactive map modes to zoom in/out and use drag & drop style map navigations.

Alternatively, show the movement path of the last hours of your machinery to track position and be able to tell exactly where your machine was on which specific date and time.

Feature overview:

- Drag & drop map
- Full screen map mode
- Movement path mode: Track movement of on machine
- Marker mode: show the current position of different machines
- Direction: Display the direction of your machinery in marker mode
- Display additional on-click information for every marker

Step by step - movement path

1. Everything starts with an Analytics Query. Create a query with at least the following columns:
 - a. Thing
 - b. Timestamp
 - c. Longitude
 - d. Latitude

Set a Filter to the Thing-column so that the path of only one thing is illustrated.

Make sure, to order the Timestamp-column descending to get the latest values on top of your dataset.

The screenshot shows the 'Data set' configuration interface. It has four columns: 'Thing', 'Timestamp', 'Longitude', and 'Latitude'. The 'Thing' column is filtered with the value 'WolfurtSaw1'. The 'Timestamp' column is sorted 'Descending'. The 'Longitude' and 'Latitude' columns are not filtered or sorted. The 'Show data' checkbox is checked for all columns.

| Thing | Timestamp | Longitude | Latitude |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| thing | timestamp | MDE1_2.MachineNumber | MDE1_2.MachineNumber |
| Filter | Filter | Filter | Filter |
| = WolfurtSaw1 | None | | |
| Aggregation | Aggregation | Aggregation | Aggregation |
| None | None | None | None |
| Sort | Sort | Sort | Sort |
| Select... | Descending | Select... | Select... |
| Group column by | Group column by | Group column by | Group column by |
| None | None | None | None |
| Group column | Group column | Group column | Group column |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Show data | Show data | Show data | Show data |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| # Text | timestamp | Nummer | Nummer |

2. Create a new Widget, "Add new Element" and select "Map" as Element type.

The screenshot shows the 'Widgets' configuration interface. On the left, the 'Elements' list shows 'Add new Element' highlighted. On the right, the 'General' settings for the 'Unnamed Element' are shown. The 'Value Type' is set to 'Map'.

Widgets

Widget List > New Widget

Elements

- General
- Main Value
- Unnamed Element
- + Add new Element

1.

General

Header

Show Header in Widget

Row Span

Column Span

Value Type

Fixed DataSource Table Chart ProgressBar Image **Map**

2.

Map Settings Parameters

3. Select the Data Source (analytics query or script) for your map – like in any other widget element. Furthermore, select the column of the data source which should be used as longitude and which column should be used as latitude.

Map Settings Parameters

Query Type ☒ AnalyticsQuery ☐ Script

1. Query

Map Type ☒ Path ☐ Marker

2. Longitude Column

Latitude Column

Center on first Point ☒

Update mode

Initial Zoom

Line Color

Arrowhead Color

Refresh Time (sec)

Limit Rows ☐ OFF

4. (Optional): Set the color of the movement path line and the movement direction color.
5. (Optional): Set the zooming mode settings:
 - a. Center on first point: The map is centered on the first path point
 - b. Update mode: Defines, how the map behaves, if new position data arrive.
 - i. Keep in bounds: The zoom and map position is adjusted, to keep all path points within the visible range
 - ii. Center on last point: The map is adjusted to automatically always be positioned to display the latest point
 - iii. None: The zoom as well as map position is not automatically adjusted
 - c. Initial zoom: Set the initial zoom range (0 ... min zoom setting)

Step by step - marker mode

Marker mode allows to display the last position of several machines and furthermore provides an option to display the direction of the machinery.

1. Again, everything starts with an Analytics Query. Create a query with at least the following columns:
 - a. Thing
 - b. Timestamp
 - c. Longitude
 - d. Latitude

Order the Timestamp-column descending to get the latest values on top of your dataset.

The screenshot shows a 'Data set' configuration window with four columns. Each column has a header row with a filter icon, a name, a type, and a delete icon. Below the header is a configuration section with Filter, Aggregation, Sort, and Group column by options. The 'Sort' dropdown for the 'Timestamp' column is highlighted with a red box and set to 'Descending'.

| Maschine | Timestamp | GPS_POS_1_LAT | GPS_POS_1_LONG |
|---|---|---|---|
| [Example]event.thing | [Example]event.timestamp | Example.GPS_POS_1_LAT | Example.GPS_POS_1_LONG |
| Filter: None | Filter: None | Filter: + | Filter: + |
| Aggregation: None | Aggregation: None | Aggregation: None | Aggregation: None |
| Sort: Select... | Sort: Descending | Sort: Select... | Sort: Select... |
| Group column by: None | Group column by: None | Group column by: None | Group column by: None |
| <input type="checkbox"/> Group column | <input type="checkbox"/> Group column | <input type="checkbox"/> Group column | <input type="checkbox"/> Group column |
| <input checked="" type="checkbox"/> Show data | <input checked="" type="checkbox"/> Show data | <input checked="" type="checkbox"/> Show data | <input checked="" type="checkbox"/> Show data |

2. Create a script which calculates the latest incoming value for latitude and longitude.

Assuming, our Analytics query used as script input was called "GeneralDataAll" and the above illustrated columns were combined to our input data set, the script looks as follows: Simply copy the script to your script editor, use the previously created analytics query as input and define the following output variables:

- timestamp (type: timestamp)
- thing (type: string)
- latitude (type: double, decimal places: 6)
- longitude (type: double, decimal places: 6)

```

library(dplyr) #very useful library for data manipulation

# order dataset descending
GeneralDataAll <- arrange(GeneralDataAll, desc(Timestamp))

# group dataset by thing and select the very first entry per group
df1 <- group_by(GeneralDataAll, Maschine) %>%
  summarise(Timestamp = head(Timestamp, 1),
    latitude = head(GPS_POS_1_LAT, 1),
    longitude = head(GPS_POS_1_LONG, 1)
  )

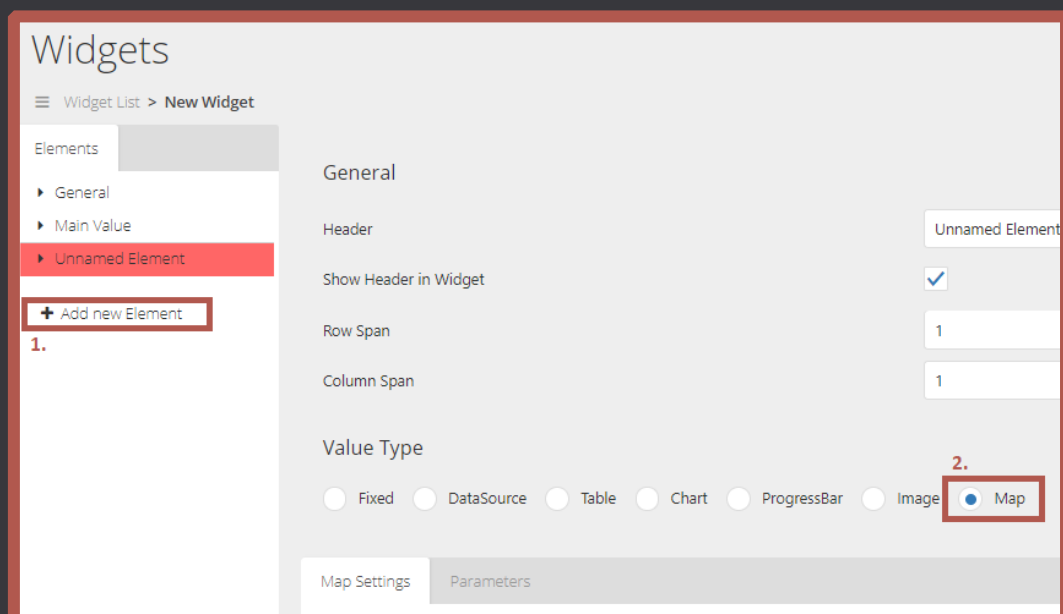
# order dataset descending
df1 <- arrange(df1, desc(Timestamp))

# create the resulting output variables
timestamp = df1$Timestamp
thing = as.character(df1$Maschine)
latitude = df1$latitude
longitude = df1$longitude

```

Please be aware, that the analytics query columns must match the script variable names -> The analytics query must be named **GeneralDataAll**, the thing-column must be named **Maschine**, the timestamp-column must be named **Timestamp**, the latitude column must be called **GPS_POS_1_LAT** and the longitude **GPS_POS_1_LONG**. Rename the according variables in the script, if the naming deviates from the above stated.

3. Create a new Widget, "Add new Element" and select "Map" as Element type.



4. Select "Marker" as "Map Type" (1), choose script as query type and select the newly created scrip as data source (2). Set the longitude and latitude column (3).

Optionally, select a column for direction display and on-click popup info. (4)

The screenshot shows the 'Map Settings' dialog box with a 'Parameter' tab. The settings are as follows:

- Query Type:** Radio buttons for 'AnalyticsQuery' and 'Script'. The 'Script' option is selected and highlighted with a red box labeled '2.'.
- Query:** A dropdown menu with 'Select...' and a right arrow, highlighted with a red box.
- Map Type:** Radio buttons for 'Path' and 'Marker'. The 'Marker' option is selected and highlighted with a red box labeled '1.'.
- Longitude Column:** A dropdown menu with 'Select...' and a right arrow, highlighted with a red box labeled '3.'.
- Latitude Column:** A dropdown menu with 'Select...' and a right arrow, highlighted with a red box.
- Direction Column:** A dropdown menu with 'Select...' and a right arrow, highlighted with a red box labeled '4.'.
- Popup Info Column:** A dropdown menu with 'Select...' and a right arrow, highlighted with a red box.
- Update mode:** A dropdown menu with 'None' selected.
- Initial Zoom:** A numeric input field with '13'.
- Refresh Time (sec):** A numeric input field with '0'.
- Limit Rows:** A checkbox labeled 'OFF'.

5. (Optional): Set the zooming mode settings:

- a. Update mode: Defines, how the map behaves, if new position data arrive.
 - i. Keep in bounds: The zoom and map position is adjusted, to keep all path points within the visible range
 - ii. Center on last point: The map is adjusted to automatically always be positioned to display the latest point
 - iii. None: The zoom as well as map position is not automatically adjusted
- b. Initial zoom: Set the initial zoom range (0 ... min zoom setting)

End result

