



# Marina Compass

## Visualizing HANA Graph and Spatial

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# Build intelligent applications with advanced analytical processing

## Structured Data

Unified data model & SQL language across all data types

## Spatial

Combine business data with geographical data

## Graph

Build & analyze relationships in data on the fly

## Text & Search

Full-text search, navigation, and access to structured & unstructured data

## Predictive

Proactive & intelligent decisions

## Machine Learning

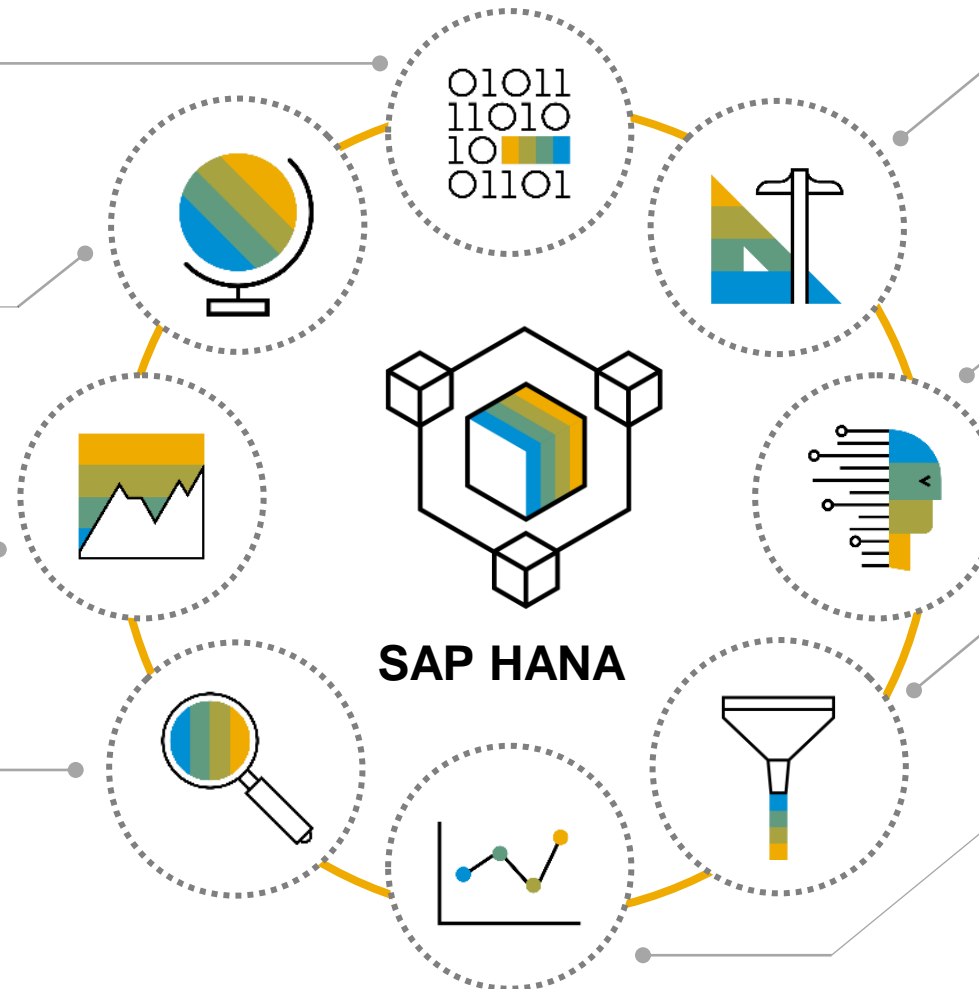
Train & deploy models in real time

## Streaming

Real-time analysis of data streams

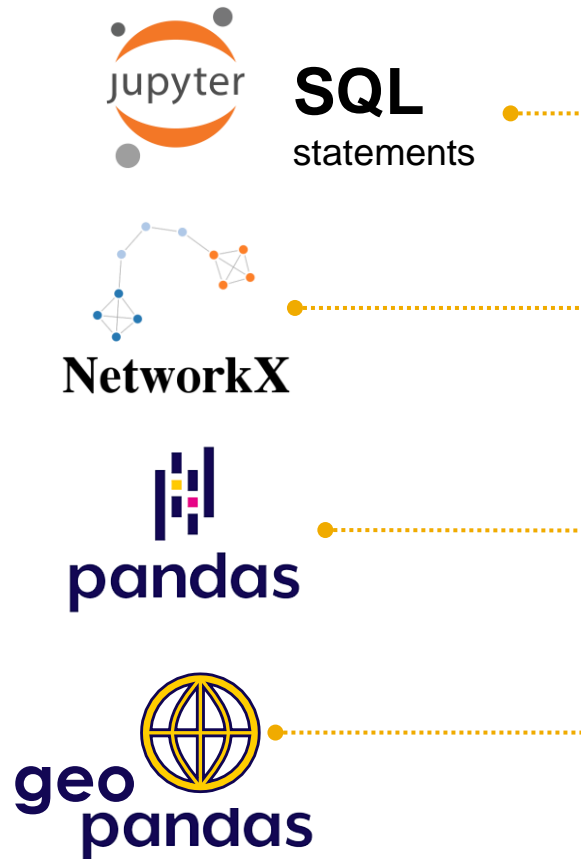
## Series Data

Capture & analyze a sequence of successive data points

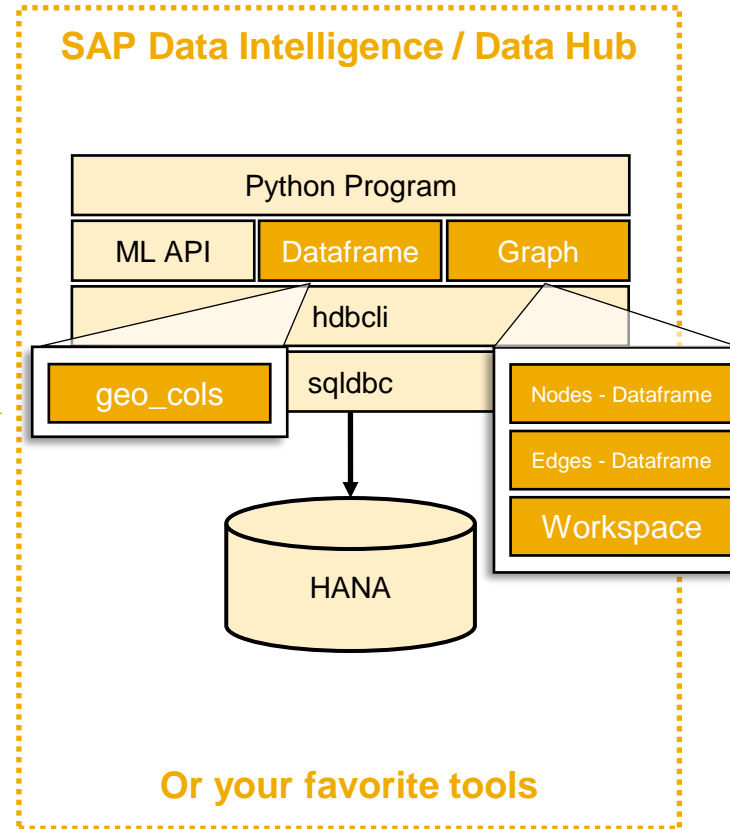


# What is HANA ML | High Level Architecture

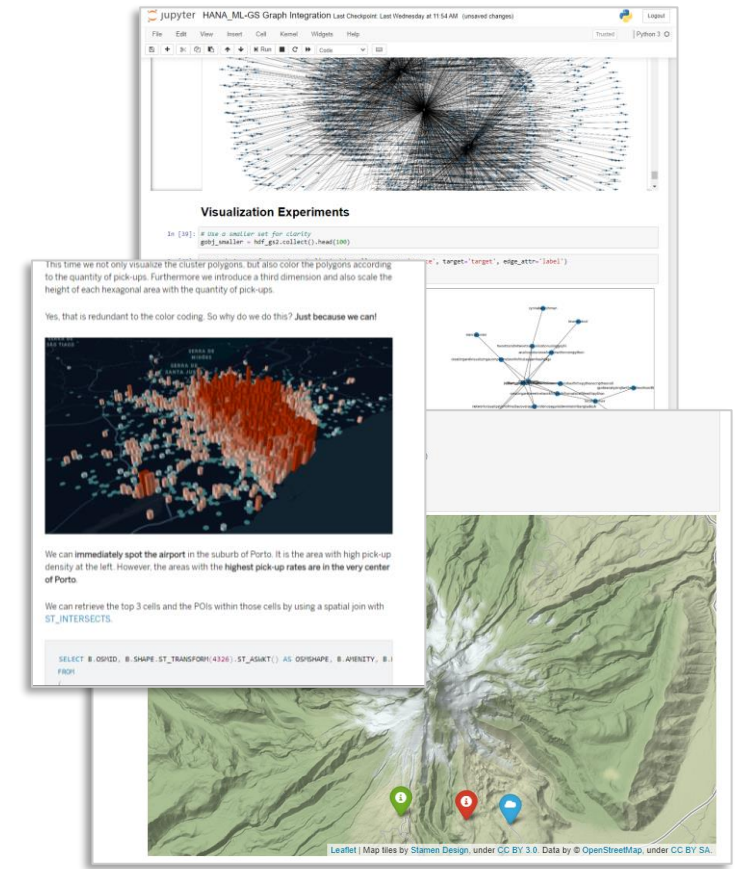
# Popular Data Science Tools



## SAP Stack

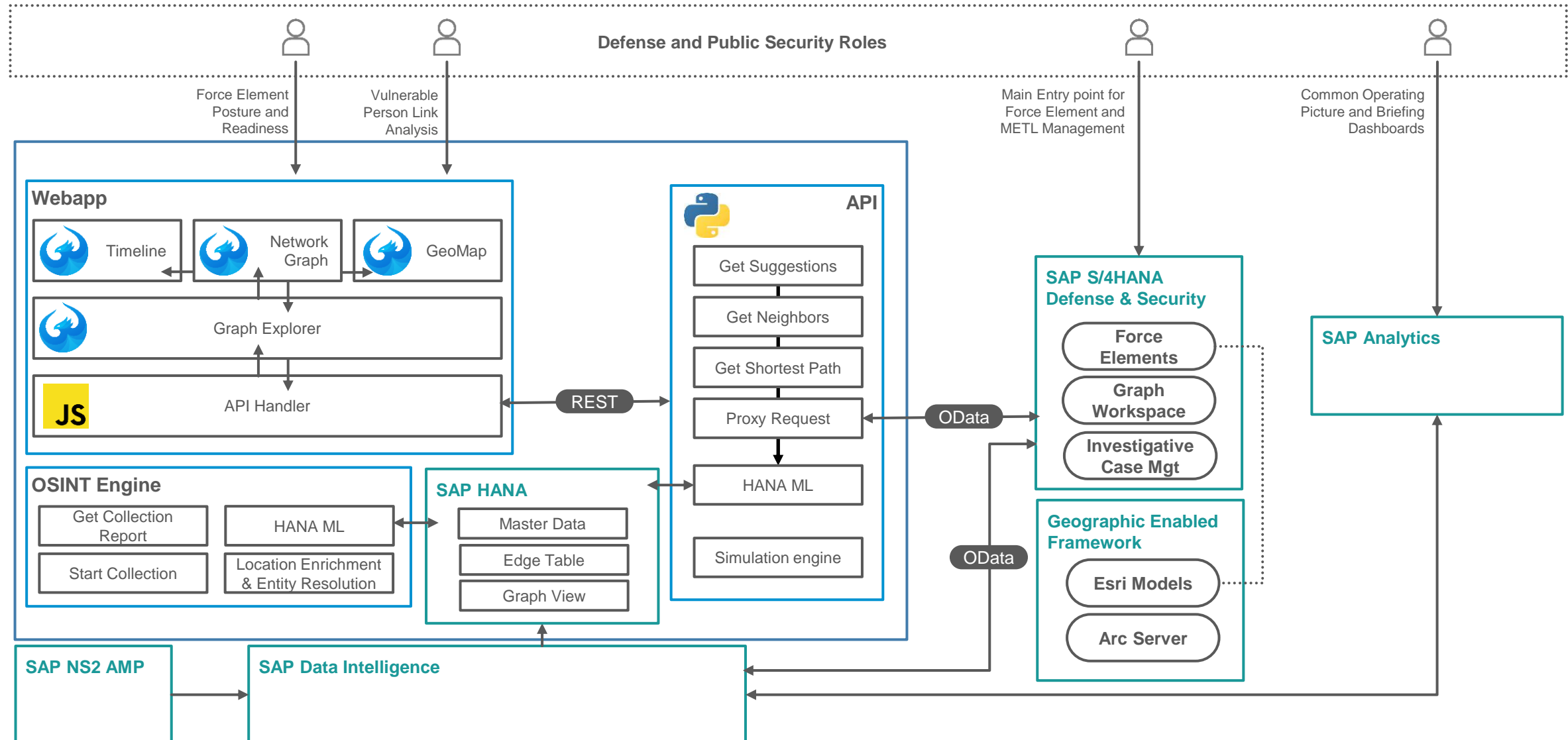


## Visualization Objects



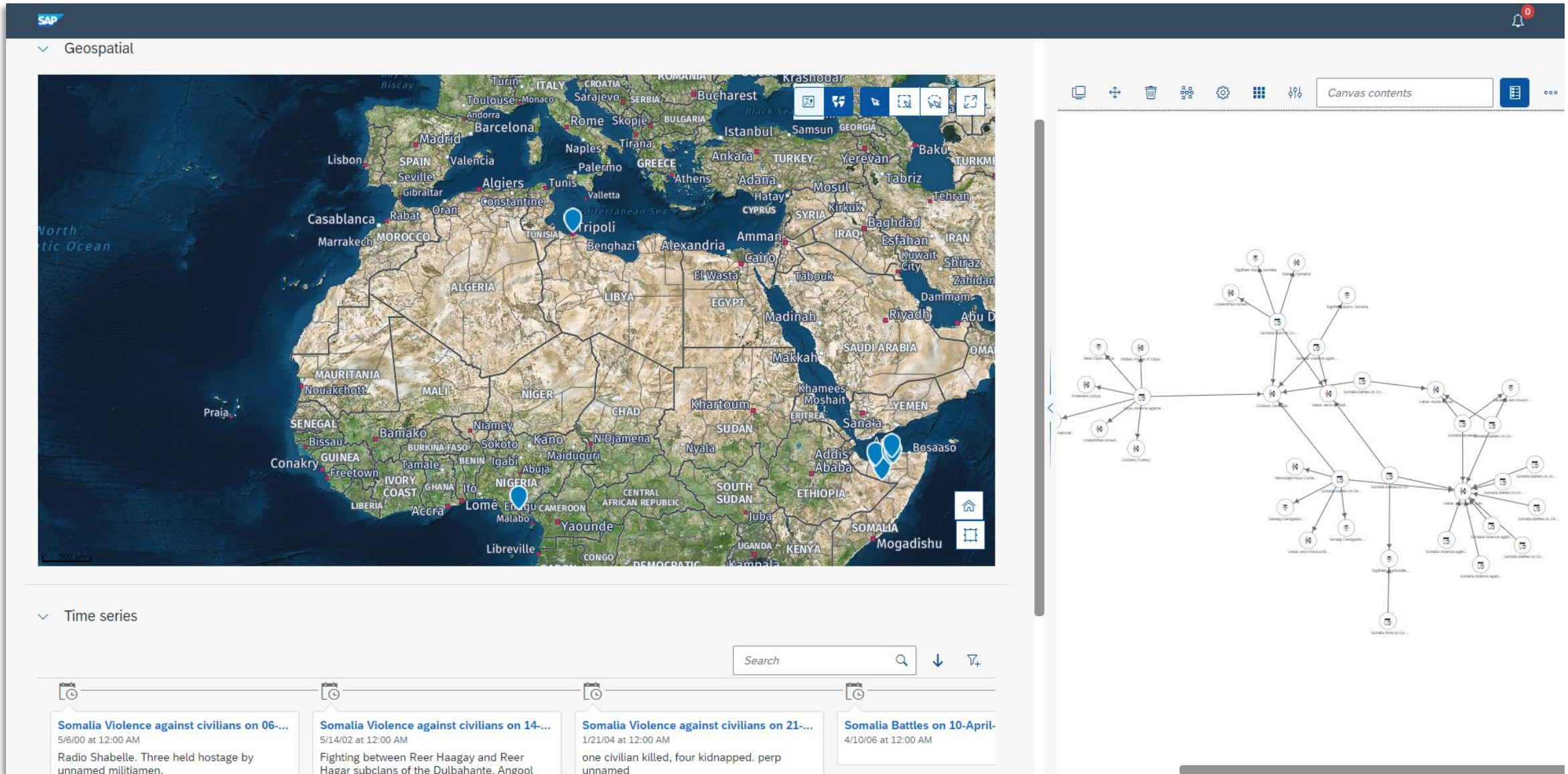
*Pandas columns are to numpy as GeoPandas columns are shapely*

# Marina Compass Architecture

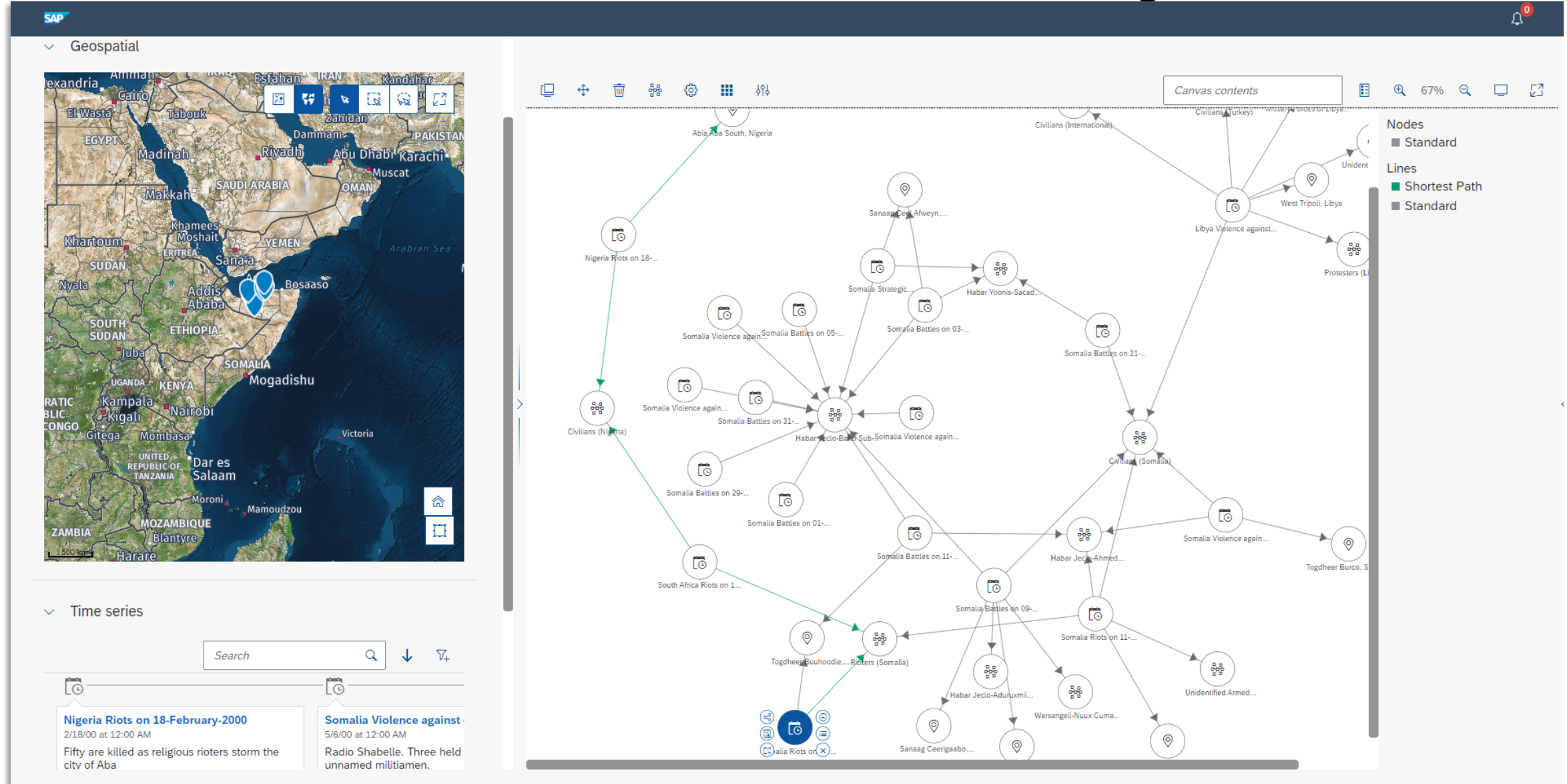




# Analyzing ACLED Data with Graph, Geospatial and Timeline

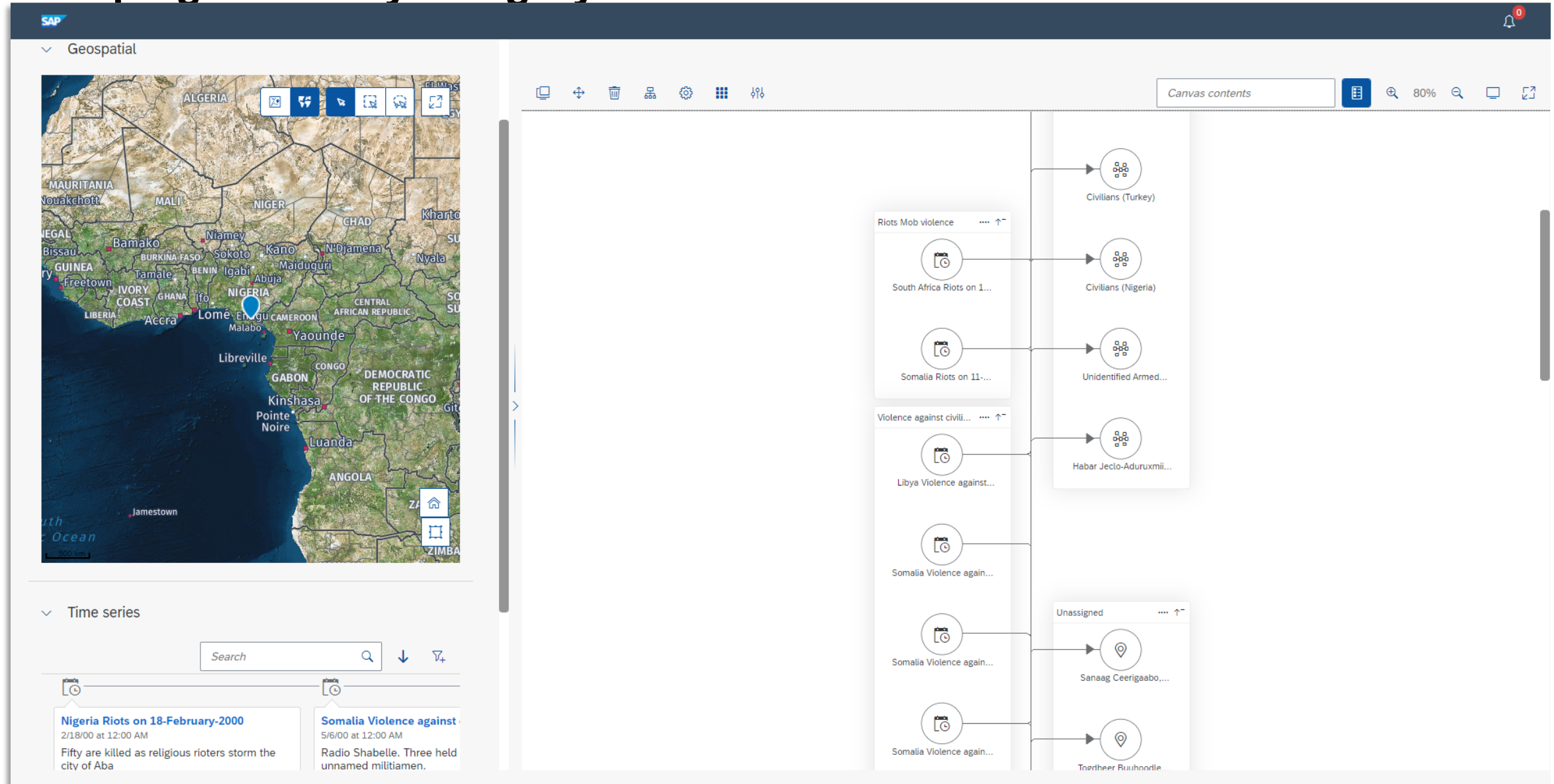


## Shortest Path between event in Somalia and Place in Nigeria





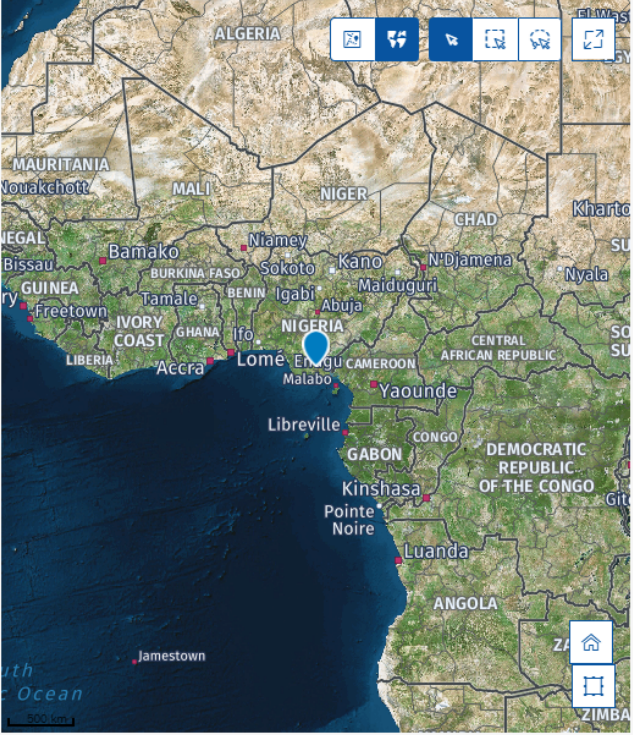
# Grouping events by category...



## ... or any available attribute among entities like source

SAP

Geospatial



Time series

Search

Nigeria Riots on 18-February-2000  
2/18/00 at 12:00 AM  
Fifty are killed as religious rioters storm the city of Aba

Somalia Violence against...  
5/6/00 at 12:00 AM  
Radio Shabelle. Three held unnamed militiamen.

Group by attributes

On Off

- type
- category
- location
- description
- fatalities
- source
- dateTime
- status
- country
- latitude
- longitude
- Unassigned

Canvas contents

80%

Somalia Battles on 05-...

Sanaag Ceerigaabo,...

Somalia Violence again...

Rioters (Nigeria)

Somalia Violence again...

Abia Aba South, Nigeria

Reuters

Civilians (Turkey)

Nigeria Violence agains...

Civilians (International)

AFP

Libya Violence against...

Protesters (Libya)

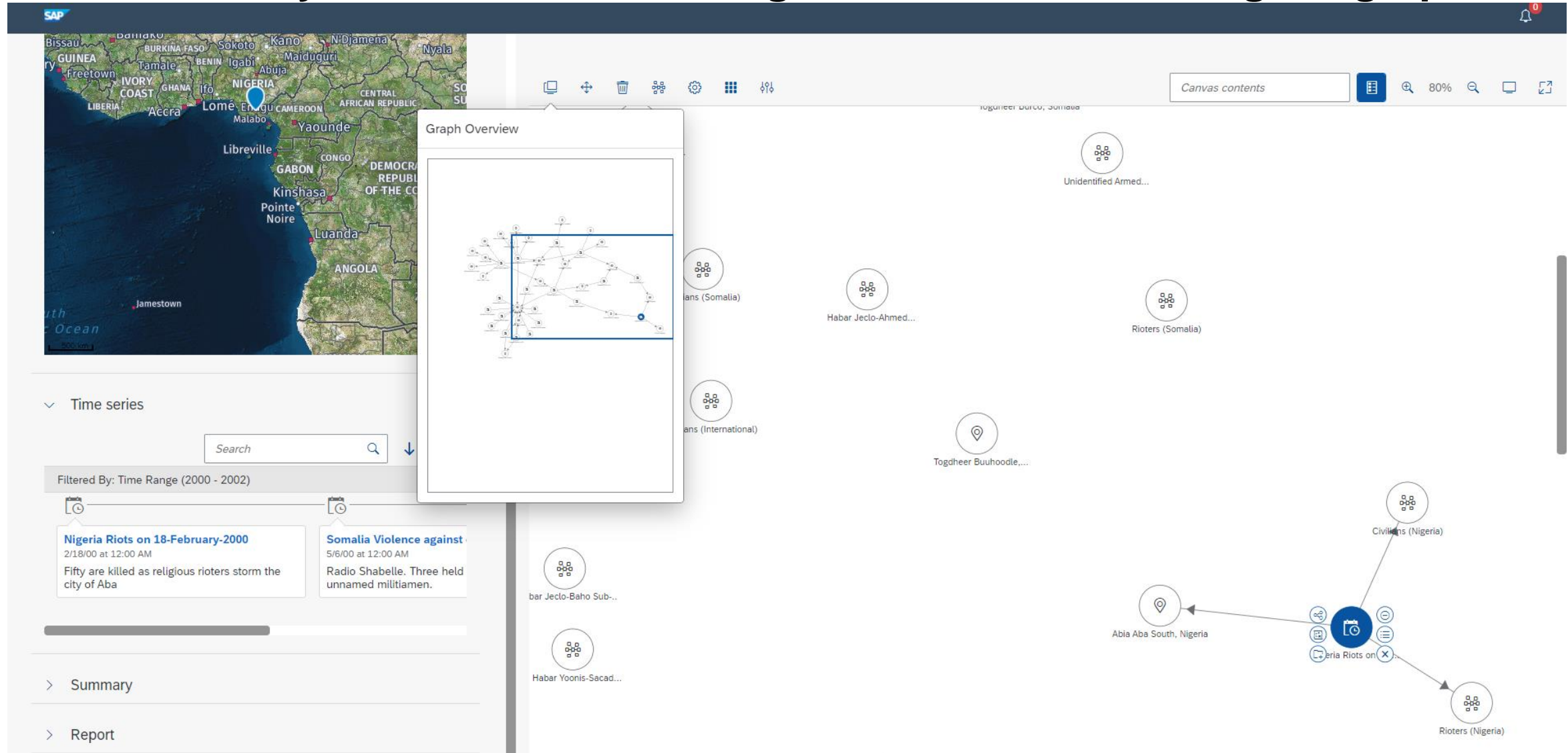
Daily Vox (South Africa)

Sanaag Ceel Afweyn,...

South Africa Riots on 1...



# Filter events by date while maintaining an overview of the original graph



# Situations Created by Graph Patterns

The screenshot displays the SAP user interface. On the left is a sidebar with a search bar and a list of navigation items: Search, Workbench, Geospatial, Time series, Summary, and Report. The central area is a large canvas labeled 'Canvas contents' at the top right, which is currently empty. Above the canvas is a toolbar with icons for various functions. On the right side, a 'Situations' panel is open, showing a list of four situation types, each with a warning icon, a title, a description, and a close button (X).

Situations	
⚠ Defense Readiness	×
Found 0 readiness situations.	
⚠ Investigations	×
Found 1 cases with new data	
⚠ Troubled Families	×
Found 7 at risk families situations	
⚠ Public Security	×
Found 22 surveillance situations.	

# Public Security Use Case involving Space Time Coincidences

SAP

> Search

> Workbench

> Geospatial

> Time series

> Summary

> Report

Canvas conte...

...

Situations

Table

Gantt

Both

Full-screen

Graph

Collapse all

Collapse selection

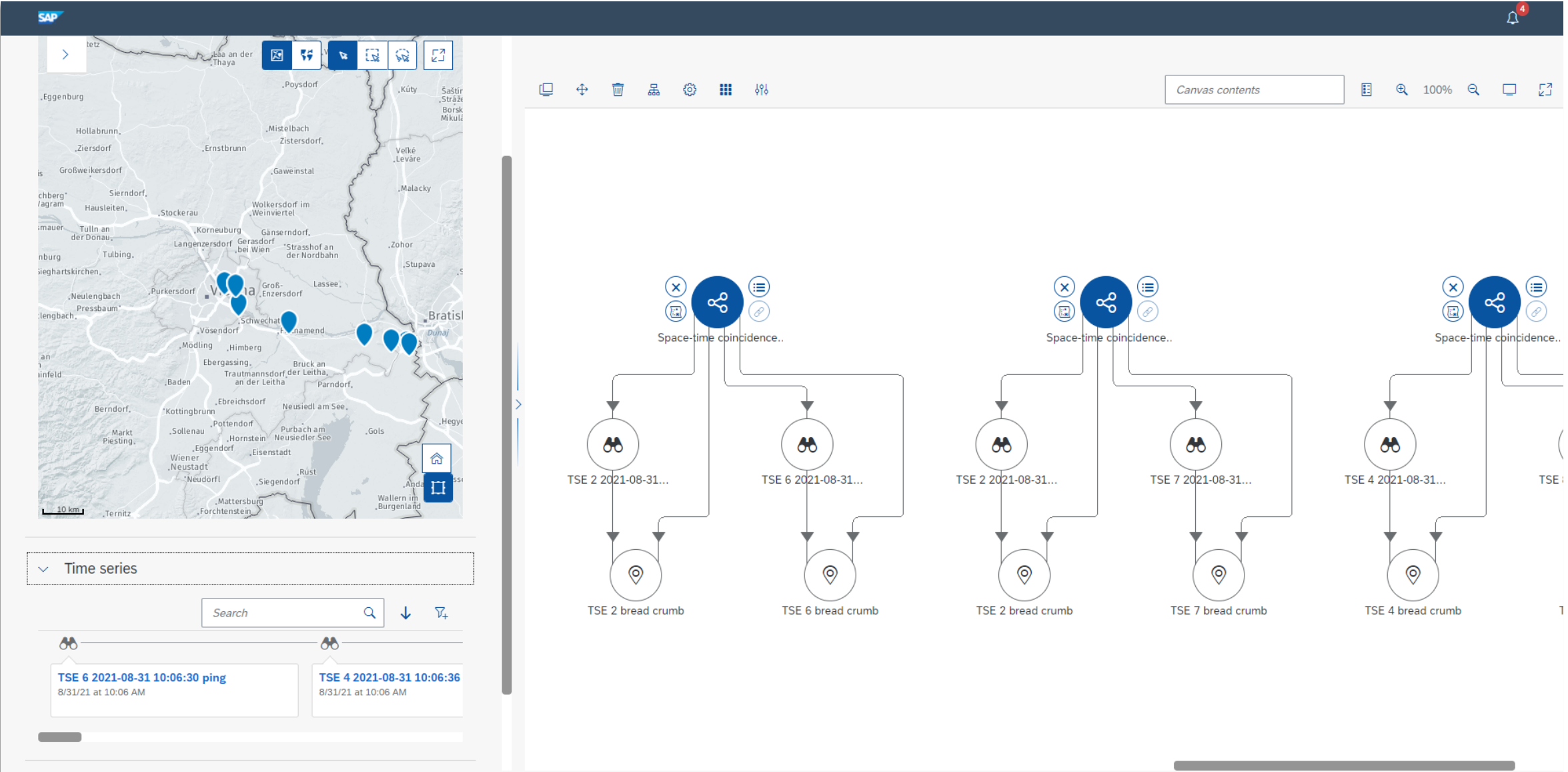
Expand all

Expand selection

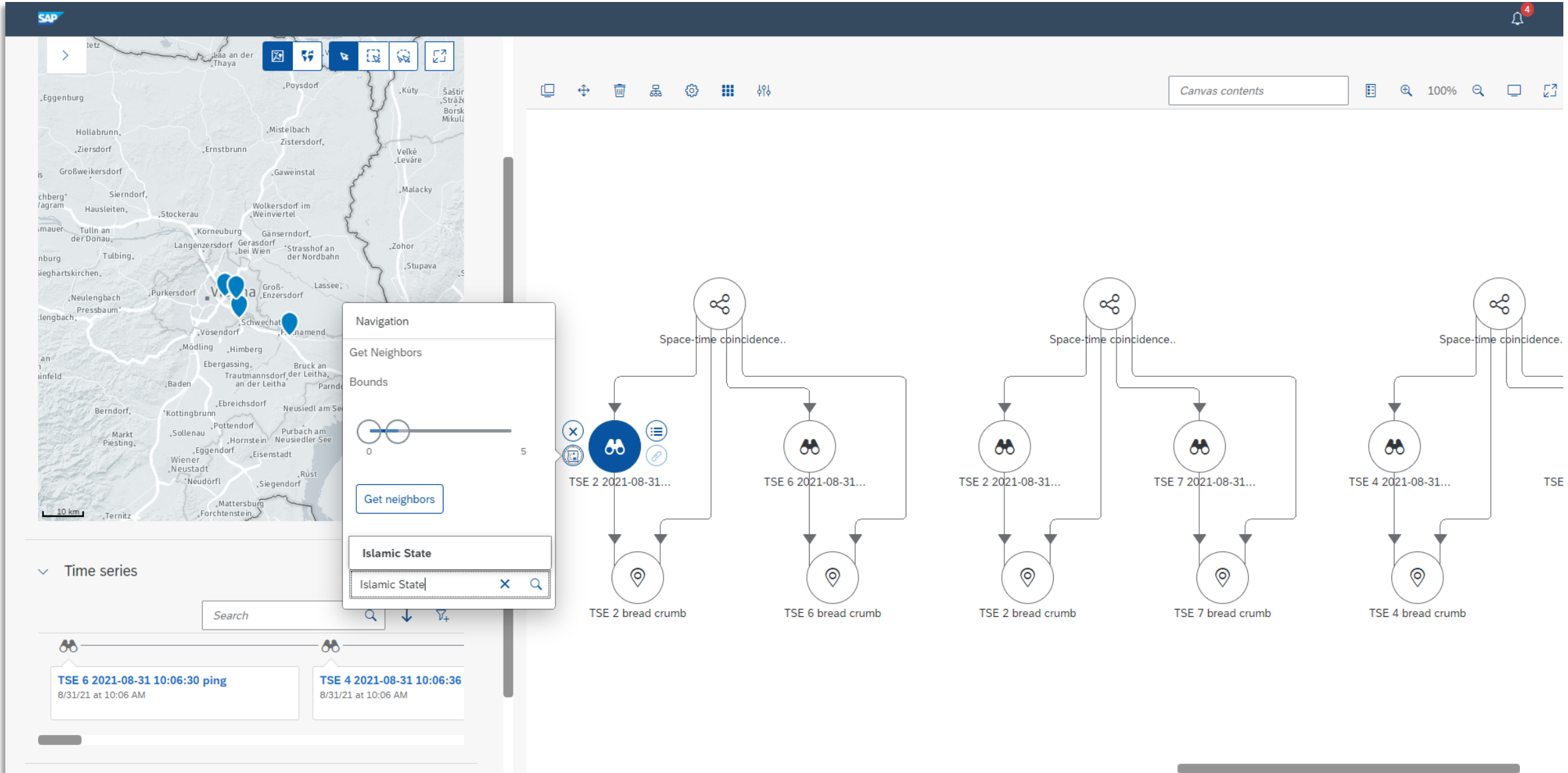
<input type="checkbox"/>	Spatial Temporal Coincidence Entity	Longitude	Latitude	Date Time	Add to Graph
<input type="checkbox"/>	Space-time coincidence with TSE 6 2021-08-31 10:06:30 ping TSE 4 2021-08-31 10:06:36 ping				
<input type="checkbox"/>	TSE 4 bread crumb	16.4307965	48.2040676	N/A	
<input type="checkbox"/>	TSE 4 2021-08-31 10:06:36 ping	N/A	N/A	2021-08-31 10:06:36	
<input type="checkbox"/>	TSE 6 bread crumb	16.4307965	48.2040676	N/A	
<input type="checkbox"/>	TSE 6 2021-08-31 10:06:30 ping	N/A	N/A	2021-08-31 10:06:30	
<input checked="" type="checkbox"/>	Space-time coincidence with TSE 6 2021-08-31 10:20:01 ping TSE 8 2021-08-31 10:20:06 ping				
<input type="checkbox"/>	TSE 6 bread crumb	16.4781758	48.1560281	N/A	
<input type="checkbox"/>	TSE 6 2021-08-31 10:20:01 ping	N/A	N/A	2021-08-31 10:20:01	
<input type="checkbox"/>	TSE 8 bread crumb	16.4781758	48.1560281	N/A	
<input type="checkbox"/>	TSE 8 2021-08-31 10:20:06 ping	N/A	N/A	2021-08-31 10:20:06	



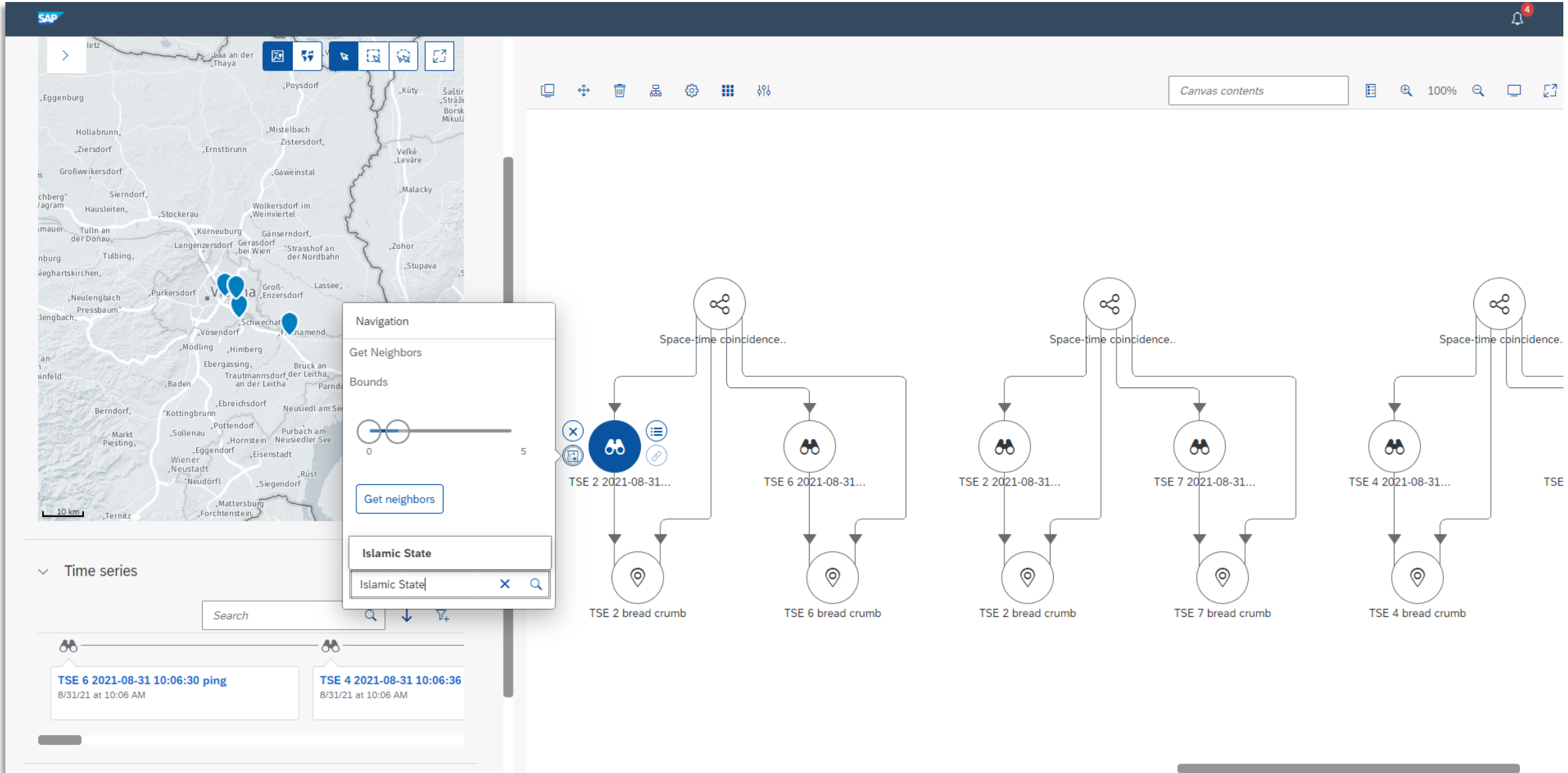
# Render Coincidences on Graph, Map, and Timeline



# Interrogate with Shortest Path to determine proximity to threat groups



# Interrogate with Shortest Path to determine proximity to threat groups





# Interrogate with Shortest Path to determine proximity to threat groups

