

# GIS-GeoAnalytics Platform

The GIS Platform enables improved monitoring and visualization capabilities of historical (batch ingestion mode) and near real-time (near real-time ingestion mode) Big Data that may involve any entity/entities accompanied by the following information:

- a) the location of the entity, i.e. coordinates (longitude and latitude);
- b) the time for the given location/measurement; as well as
- c) (optionally) other metadata. Indicatively the latter can be sensor measurements and data from smart devices, data resulting from calculations or results from the application of Machine Learning-based mechanisms.

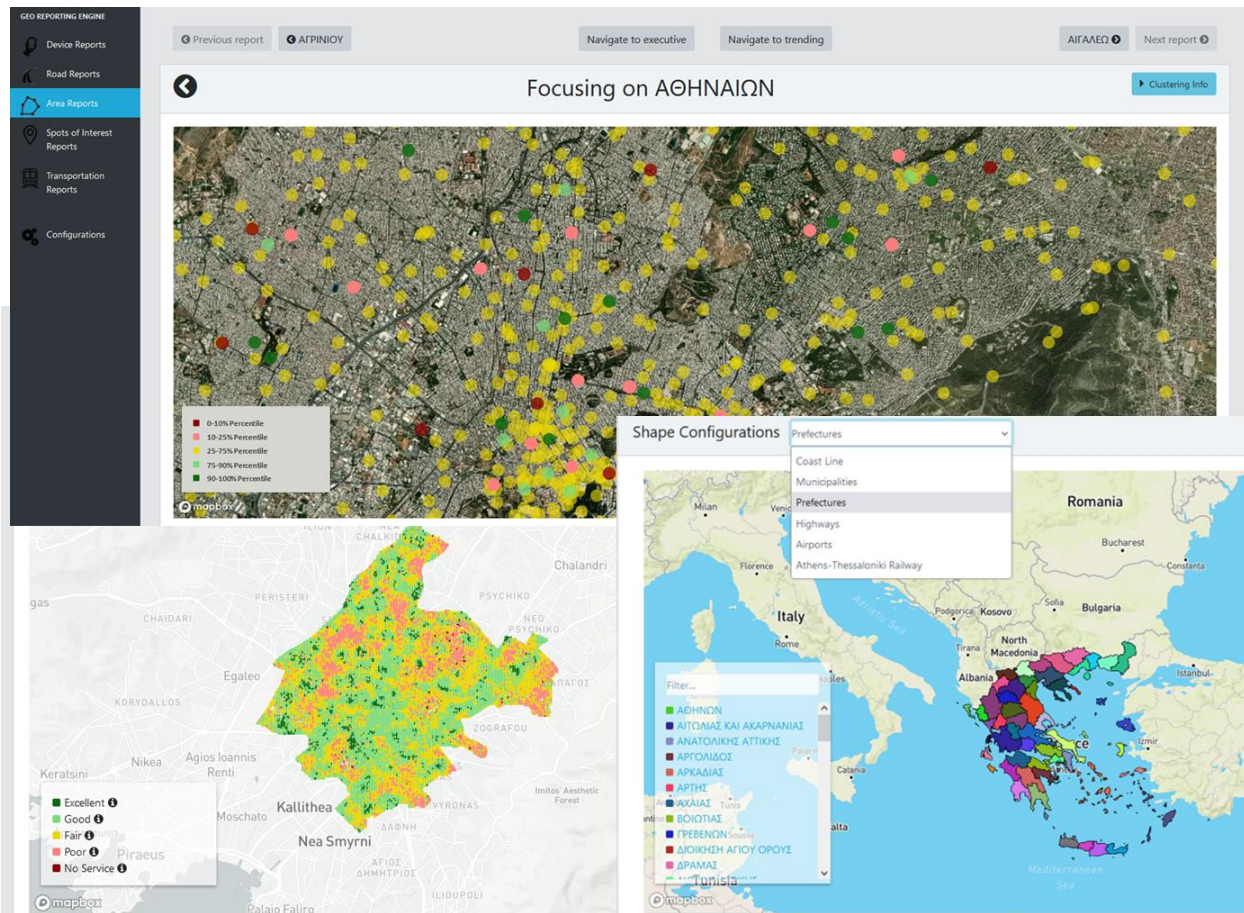


Figure 1 Indicative views of the GIS platform user interface and information visualization at Point, Raster and Shape level.

Each entity for a given timestamp/timeframe can be presented geospatially as a **Point on the map**, at the level of which the analysis and report extraction can be performed. Alternatively, the data can be combined/ fused at the level of **the smallest defined Raster** that divides the space into very small subregions (the size of the raster

can also be set dynamically in the system), through a rasterization process and assigns a value per raster and timestamp/timeframe under analysis based on a specific Key Performance Indicator (KPI).

Lastly, it should be noted that a **Shape on the map** is an integral part of the platform's conceptual design. A shape is a set of edges in the form of:

- Poly-line: Consecutive edges forming a continuous line to define routes, road networks, etc.
- Polygon: Consecutive edges that enclose an area in the form of a polygon and we can thus define/include all the points or rasters contained in it. In this case, a statistical measure is used to extract an aggregated value for the shape (e.g. average value, maximum/minimum value, median, and so on).
- Multi-polygon: Multiple polygons that enclose multiple different areas.

In fact, using shapes, information can be extracted/visualized at the level of the given (statically defined) regions (for example Prefectures) and/or areas dynamically defined by the user (i.e. polylines/polygons/multi-polygons).

Exemplifying the aforementioned, Figure 1 presents indicative views of the user interface (UI) at a Point, Raster and Shape level. The views can be adapted to fit (a) the available entities and data that will be ingested and (b) to the needs and preferences of the organization and the related use cases which they serve.

In more detail, the platform offers the possibility of conducting spatio-temporal analyses of the available data, since it processes the relevant information collected from various sources in terms of time (by selecting the time interval of analysis) and space (geographic longitude, latitude, longitude). Thus, it enables the spatiotemporal fusion of the information so that it can be represented in the form of a map at any given time/timeframe chosen by the user of the tool, but also in the form of tables that can be exported to files by the user.

The UI is user-friendly and interactive. Indicatively, it offers users features such as:

- Selecting and focusing on smaller or larger areas and selecting filters;
- Displaying values related to the area on the map on mouse hover;
- Selecting a point on the map to further highlight data/measurements in a table/or other widgets positioned below it;
- Color-coding on top of the map view based on the value of a KPI selected by the user;
- Selecting through on/off buttons which data will appear on the map;
- Viewing map with satellite image, map with streets and simple map;
- Saving preferences and default filters per user.

Finally, it should be emphasized that this tool also offers Analytics regarding the data under investigation, e.g. maximum/minimum value, average value and/or median, percentiles, etc. The above are offered - not only by administrative region - but also in smaller "bins" that will be chosen based on the usage scenarios and the type of information to be visualized. It also offers the possibility of presenting data derived from sophisticated analyses and/or results of application of machine learning methods.

For more information, [contact us](#).