

#OpenLayers POC – Rendering maps and dynamic content on the maps

The website I have created is <https://jay-openlayers.org> and the developed maps app is hosted here.

I did my development on top of Open Layers basic frameworks to render visualizations. I am using the Open Layers version 8.2 which is the latest version as of this date. The development is all done on React/JavaScript and Node technologies. The backend and front-end coding use dynamic HTML, CSS, AJAX (dynamic rendering), JavaScript and Typescript languages.

The app demonstrates the following:

1. Use basic maps from OpenStreetMap (OSM) and MapTiler to be able to render visualizations using:
 1. Views,
 2. Layers/Layer Groups,
 3. Targets
 4. Overlays
 5. Interactions and
 6. various types of containers

These maps can be stylized and colored flexibly as needed – on the OSM, I am using the default colors.

2. The layers use 3 base layers which include:
 1. Base Image Layer, (for maps)
 2. Base Tile Layer (for maps) and
 3. Base Vector Layer (for features, drawings and other data)

Each of them has their own set of sources

3. The app uses publicly available data on the various power stations in Germany (type - Nuclear, Thermal, Hydro, Wind, Solar), the Latitude/Longitude information and some basic data on the stations.

This data is taken and converted into a geoJSON format that is necessary to populate the Geospatial Information System (GIS) maps requirements and provide the visualizations as seen in the app.

4. The app also (at the bottom) allows you to enter free hand geometries such as 1. Line Strings, 2. Circle, 3. Points, 4. Polygons and overlay them on the map.

5. The various types of power stations can be selected in the side bar and displayed as check boxes. The migration of data from the UI components to the logic components (React and JavaScript technologies) is demonstrated using the OpenLayers library as the framework.

Open Layers is a free basic framework library that is extremely fast and offers a host of facilities to render truly informative and interactive maps based on the requirements of the application.

I have also used other frameworks - Mapbox, MapTiler, OpenStreetMap, ArcGIS (ESRI) etc., and included elements from these frameworks in the app.

This example demonstrates how the `ol` package can be used with [Vite](<https://vitejs.dev/>).

I have also looked at ArcGIS data that OpenInfraMaps uses, and we can create more variations over those that will be useful for consumers of the data. There is a vast amount of data available, and we can do a lot of good data engineering to present very intuitive visualizations to aid the consumers of the data greatly.