



Decoding the Geospatial Web: An Introduction to GIS for JavaScript Developers



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What We'll Cover

1

GIS Fundamentals

2

Mapping/GIS Libraries

3

Demos & Use Cases

4

Resources



Courtney Yatteau

Developer Advocate, Esri

What is GIS?

GIS - Geographic Information System



Maps



Data

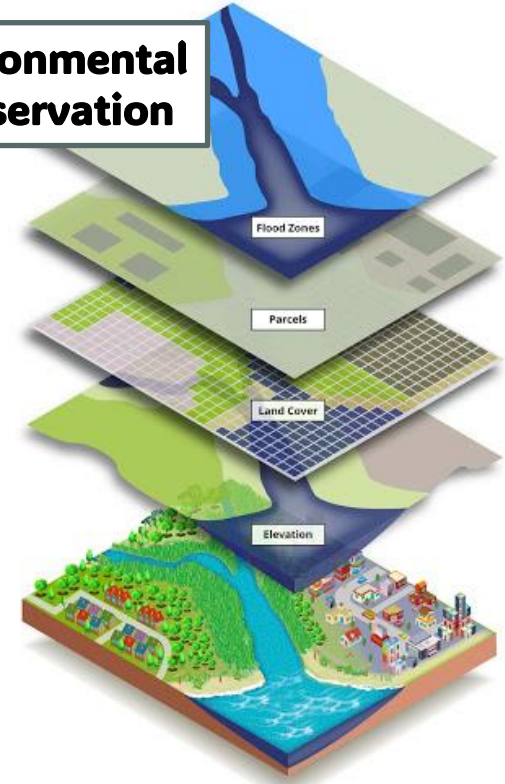


Why Use GIS?

Logistics



Environmental Conservation



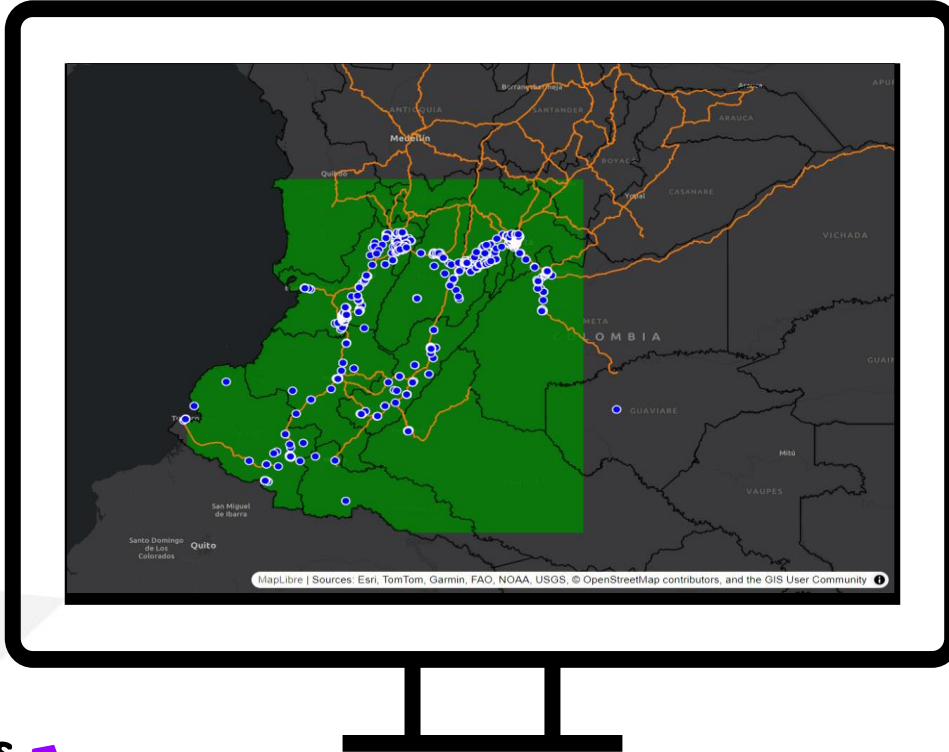
Urban Planning



GIS Data

Layers of Information

Points 



Polylines 

Polygons 

What is MapLibre GL JS?



Community plugins

The screenshot shows the MapLibre GL JS website. On the left is a map of Europe with labels for 'French', 'Reino Unido', 'Irlanda', 'London', 'Luxemburgo', 'Francia', 'Suiza', 'Mónaco', 'Andorra', 'Portugal', 'España', and 'Gibraltar'. The main content area is titled 'Plugins' and lists 'User Interface Plugins'. On the right is a 'Table of contents' with links to various plugin categories. At the bottom right is a small map snippet showing 'Scuola Grande San Marco'.

Plugins

User Interface Plugins

- [any-routing](#) - A modular plugin for calculating routes.
- [Gauge Legend](#) - Dynamic gauge legend for MapLibre GL JS
- [mapbox-gl-controls](#) - Adds controls for a ruler, style inspector, localization, and style switcher.
- [mapbox-gl-draw](#) - Adds support for drawing and editing features on maps.
- [mapbox-gl-elevation](#) - Adds a control to retrieve altitude from terrain RGB tilesets.
- [mapbox-gl-infobox](#) - Adds a control to display an infobox or a gradient.
- [mapbox-gl-legend](#) - Adds a control that shows a legend generated from the map style.
- [mapbox-gl-valhalla](#) - Adds a control to provide isochrone features from valhalla server.
- [mapboxgl-minimap](#) - Adds a control to show a miniature overview of the current map.
- [maplibre-compass-pro](#) - old fashioned compass (with compass rose) for Maplibre GL. [demo](#)
- [maplibre-preload](#) - A tiny zero-configuration plugin for preloading tiles and smoothen the experience when using targeted movements in MapLibre GL JS.
- [maplibre-gl-basemaps](#) - A plugin for switching between raster basemaps.
- [maplibre-gl-compare](#) - Enables users to compare two maps by swiping left and right.
- [maplibre-gl-export](#) - Adds a control that exports the map as a PDF or images such as PNG, JPEG and SVG.
- [maplibre-gl-measures](#) - A plugin for taking measures on the map.
- [maplibre-gl-opacity](#) - A plugin to switch layer like Leaflet control layers, and update opacities

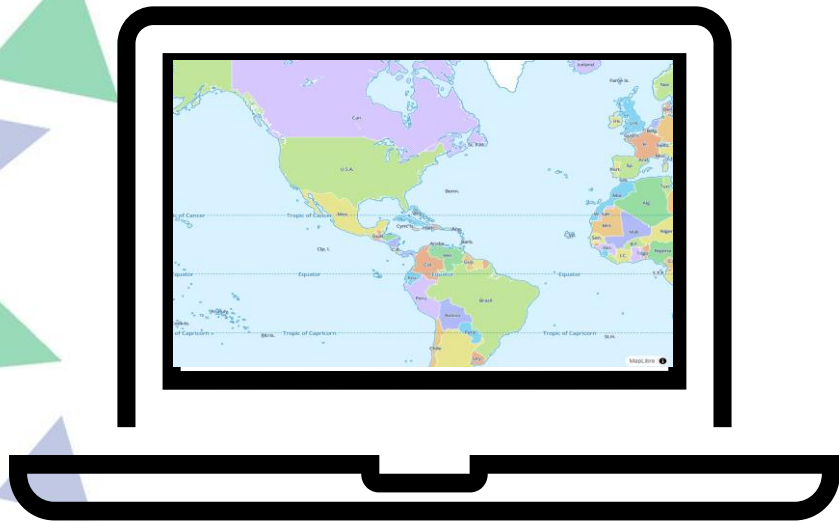
Table of contents

- User Interface Plugins
- Geocoding & Search Plugins
- Map Rendering Plugins
- Layer Types Plugins
- Utility Libraries
- Development Tools Plugins
- Framework Integrations

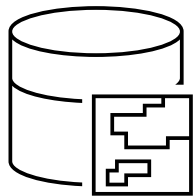
MapTiler © OpenStreetMap contributors

Setting up MapLibre GL JS

	CDN	npm
Use	Prototypes, small apps	Large apps, frameworks
Setup	No install	Install required
Code	<code><script></code> & <code><link></code> tags	<code>npm i maplibre-gl</code>
Pros	Quick, easy	Package control
Cons	Hard to scale	Slower setup



MapLibre GL JS: Demo



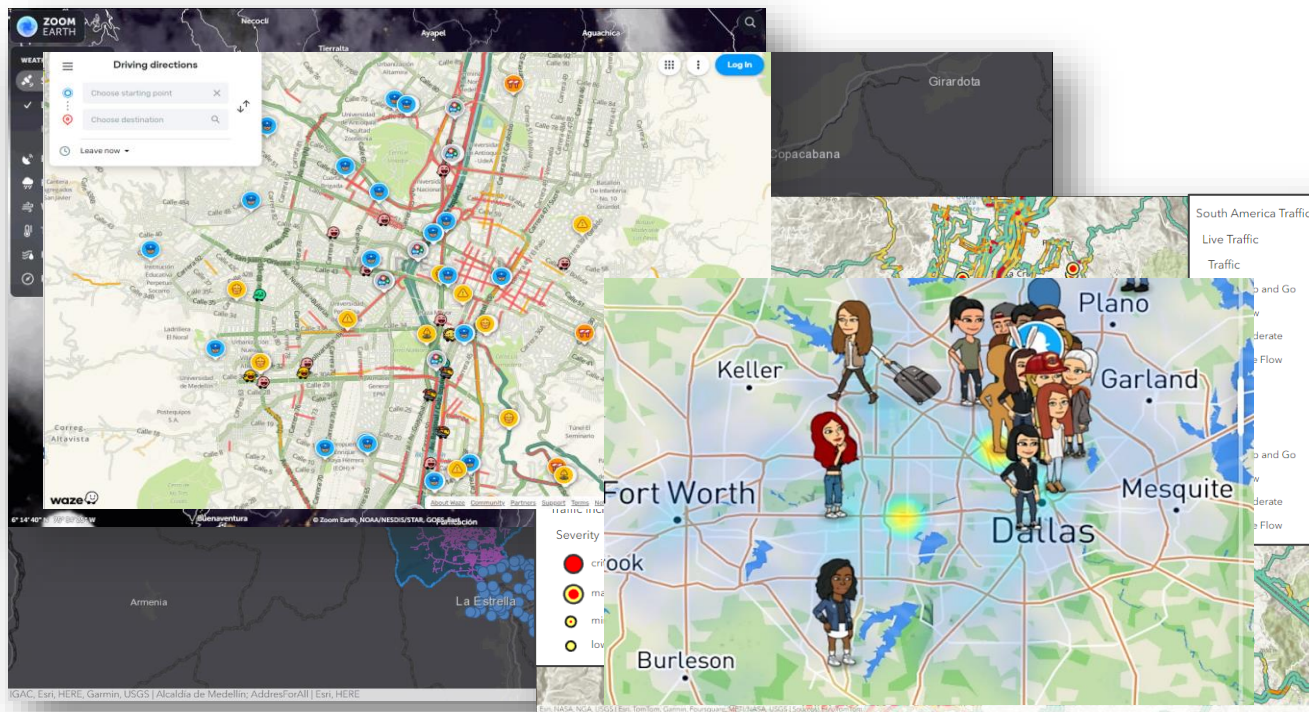
Feature Layers

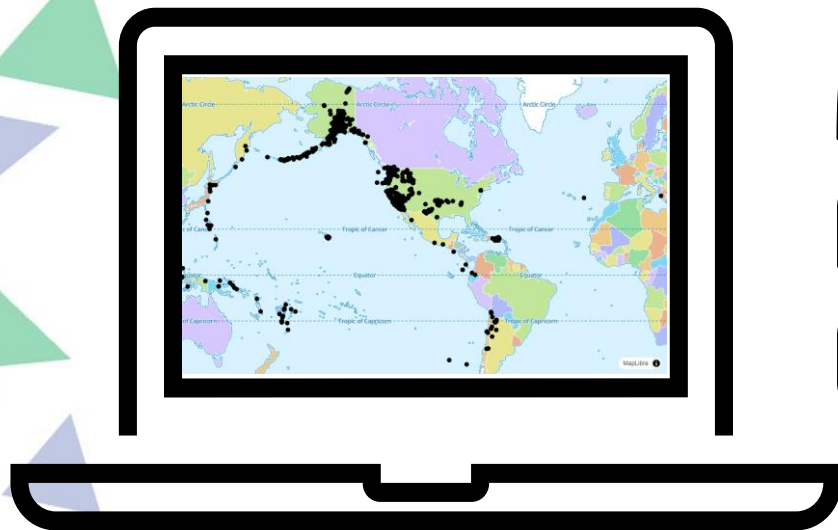
Types of GIS Layers

Interactive

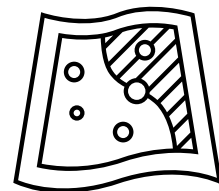
Real-time data

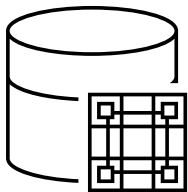
Dynamic data





MapLibre GL JS: Feature Layer Demo





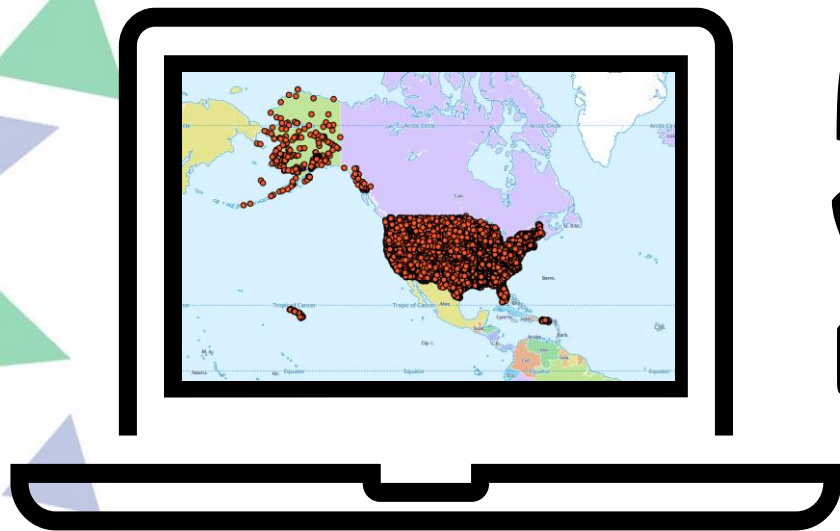
Vector Tile Layers

Types of GIS Layers

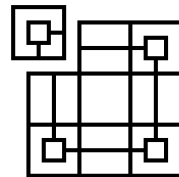
Pre-rendered

Large datasets





MapLibre GL JS: Vector Tile Layer Demo



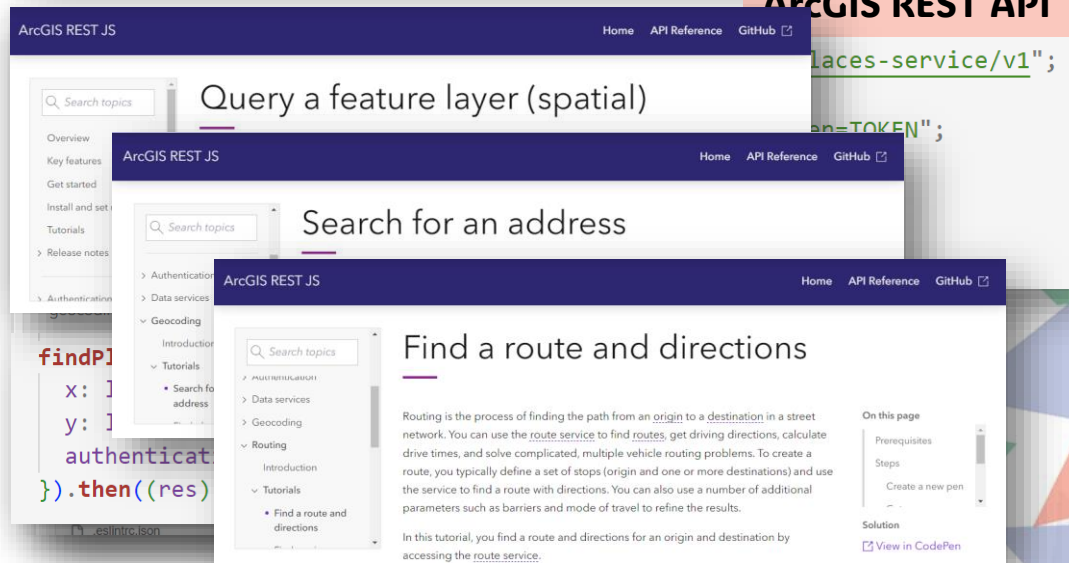
What is ArcGIS REST JS?

Open source

Lightweight &
modular

ArcGIS REST API
wrapper

Location services
(no map!)



Setting up ArcGIS REST JS

Install: npm or CDN

Modular packages

No CSS needed

Authentication required

Esri/arcgis-rest-js

compact, modular JavaScript wrappers for the
ArcGIS REST API





```
watchConsoleLogs.8258a5d6.js:6
▼ {spatialReference: {...}, candidates: Array(2), geoJson: {...}} ⓘ
  ▼ candidates: Array(2)
    ▼ 0:
      address: "ibis Medellin"
      ▶ attributes: {}
      ▶ extent: {xmin: -75.5796586, ymin: 6.2192009, xmax: -75.569651, ymax: 6.2242009}
      ▶ location: {x: -75.5746586, y: 6.2242009, spatialReference: {wkid: 4326}}
      ▶ score: 100
      ▶ [[Prototype]]: Object
      ▶ 1: {address: 'Ibis', location: {...}, score: 100, attributes: {...}}
      ▶ length: 2
      ▶ [[Prototype]]: Array(0)
    ▼ geoJson:
      ▶ features: (2) [{...}, {...}]
      ▶ type: "FeatureCollection"
      ▶ [[Prototype]]: Object
      ▶ spatialReference: {wkid: 4326, latestWkid: 4326}
      ▶ [[Prototype]]: Object
  >
```

ArcGIS REST JS: Geocoding Demo



ArcGIS Vector Tile Style Editor

vtse.arcgis.com

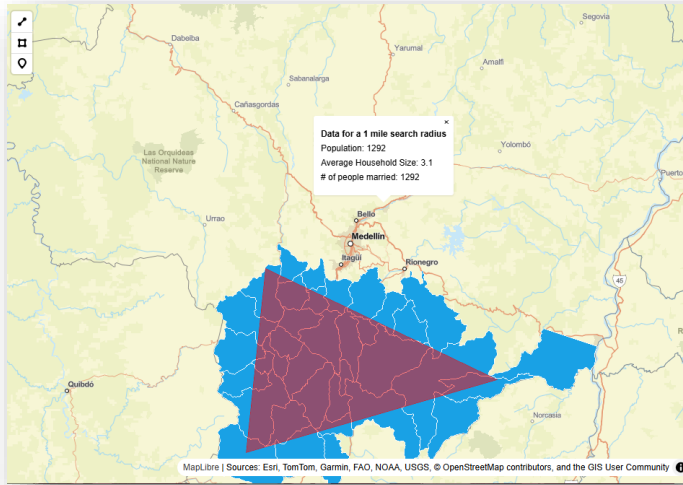
Custom styling

Easy interface

Server processing

ArcGIS account
(Location Platform or Online)





MapLibre GL JS + ArcGIS REST JS + ArcGIS VTSE Demo

Resources

Additional learning tools

01

MapLibre GL JS

- [Documentation](#)
- [ArcGIS documentation](#)
- [Repository](#)

02

Esri & ArcGIS

- [VTSE](#)
- [Local data finder](#)
- [Location Platform account](#)

03

ArcGIS REST JS

- [Documentation](#)
- [Repository](#)

04

Spatial Querying

- [Terraformer](#)
- [Draw tools](#)



**Thank you,
CityJS Medellin!**

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