



Leaflet JS

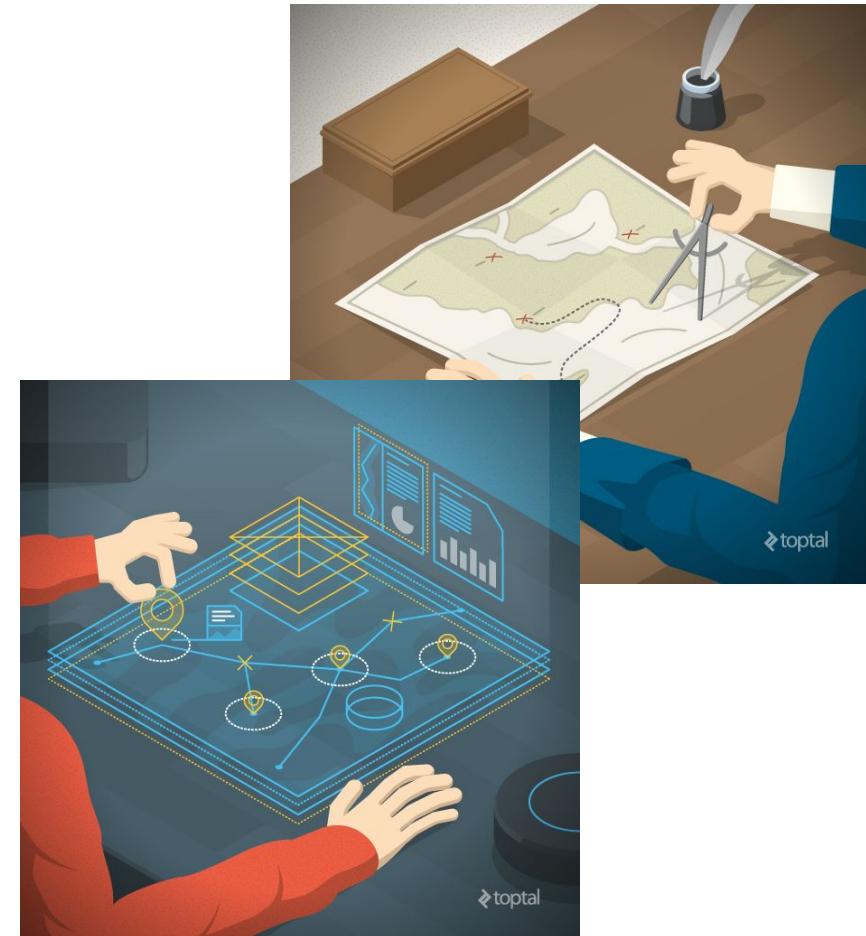
Igor Matos, Pedro Torchio e Romain Chevy

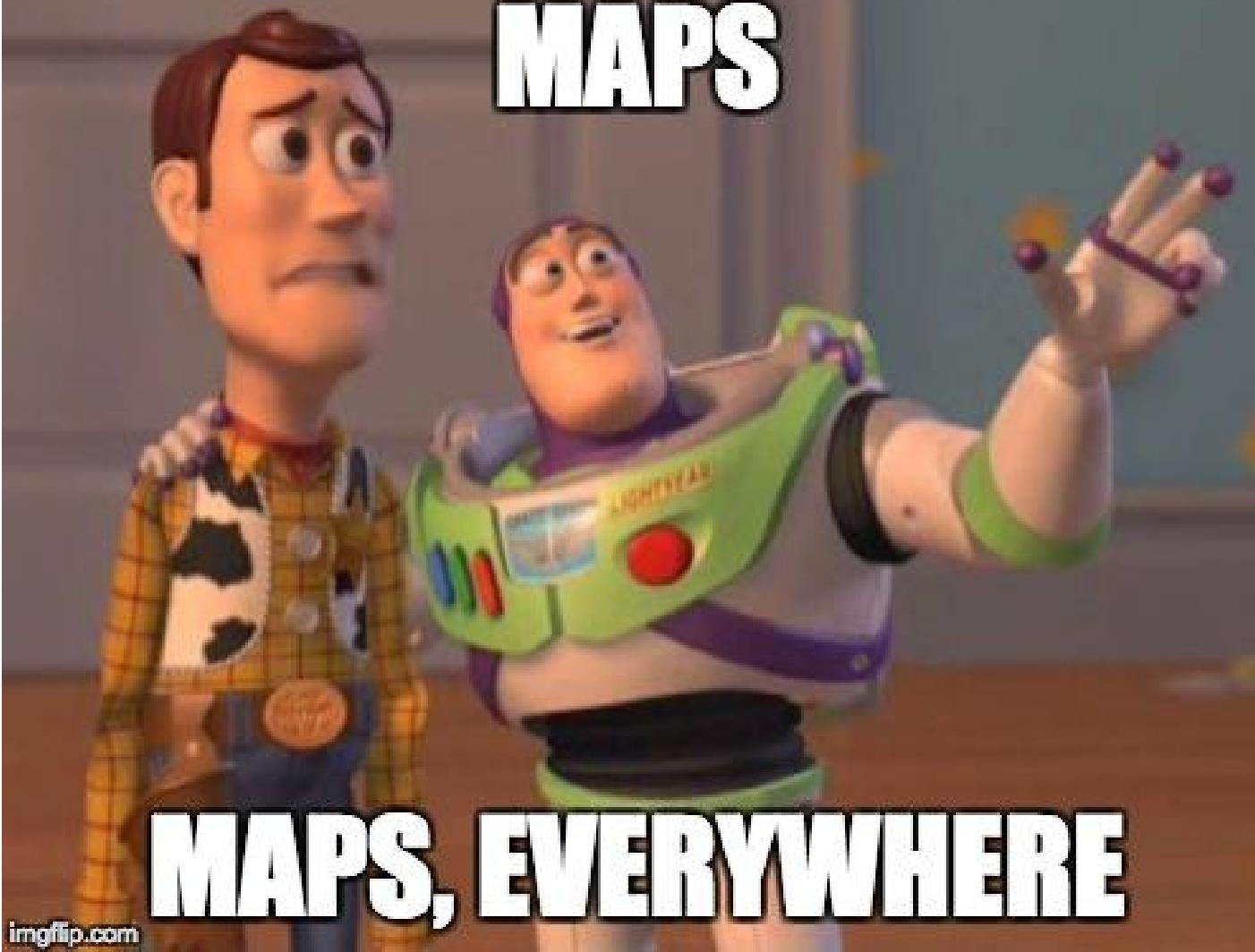
GIS - Sistema (ou ciência) de Informação Geográfica

- Capturar, analisar, manipular e armazenar dados geográficos
 - GeoJson
 - Escalas de cores

Cartografia WEB

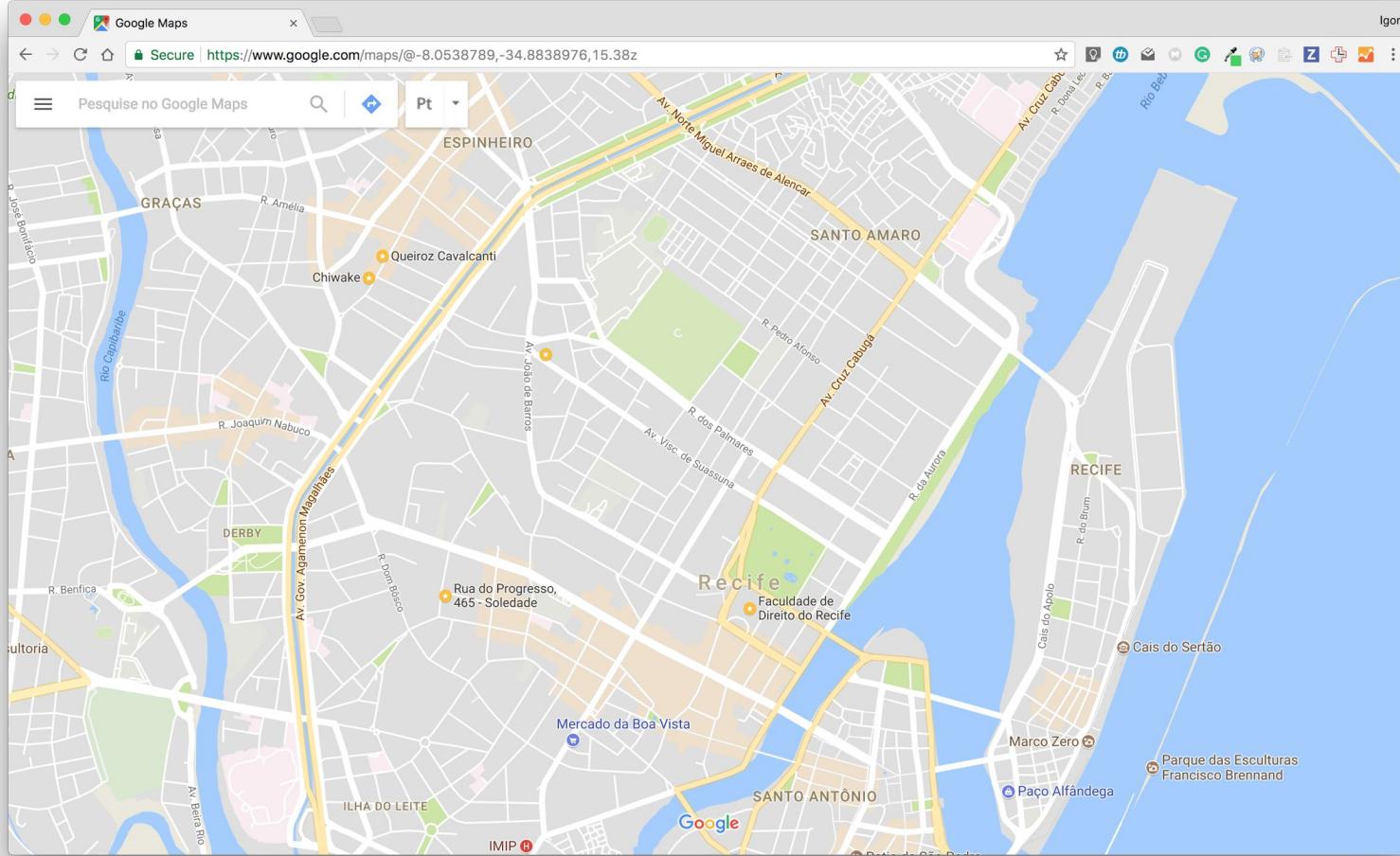
- 90's
 - Uma imagem por vez
 - Recarregada a cada ação
 - Direções e passos pré definidos
 - Ações síncronas
- 2004
 - OpenStreetMap
 - Inspirado na filosofia colaborativa do Wikipedia
- 2005
 - Google Maps
 - Tiles (Menos dados e Movimentação livre)
 - Mashup Maps



A scene from Toy Story featuring Woody and Jessie. Jessie, the cowboy doll, is in the foreground, looking excitedly upwards with her arms raised. She is wearing a green vest over a purple shirt with a red button. Woody, the wood-paneled cowboy, stands behind her, looking slightly confused or weary. He is wearing his signature brown vest with black patches and a plaid shirt underneath.

MAPS

MAPS, EVERYWHERE



#RauVive | Pedalada | Strava

Secure | https://www.strava.com/activities/1244059675/analysis

Igor

Visão geral

Análise

Premium 🔥

Frequência cardíaca

Estimativa de curva de potência

Estimativa de distribuição de 25 W

Mapa do terreno

MORRO DA CONCEIÇÃO
ALTO JOSÉ DO PINHO
ARRUDA
CAMPO GRANDE
PEIXINHOS
PARNAÍRAM
Parque da Jaqueira
INCruzilhada

Avenida Olinda

Mapbox © OpenStreetMap Improve this map

6,4 km
19:57
11 m
1,4%

200 m
150 m
100 m
50 m
0 m

0,0 km 1,0 km 2,0 km 3,0 km 4,0 km 5,0 km 6,0 km 7,0 km 8,0 km 9,0 km

Segmentos

Velocidade
Máx. 41,4
Média 19,9

19,1 km/h

Estimativa de potência
Máx. 1.262
Média 100

1.262 314 W

The screenshot shows a Strava activity analysis page for a ride titled "Igor Matos – Pedalada – Viagem cotidiana". The left sidebar has tabs for "Visão geral" (General View) and "Análise" (Analysis), with "Premium" status indicated. The main area displays a map of the route through various neighborhoods like Morro da Conceição, Alto José do Pinho, Arruda, Campo Grande, and Peixinhos. A red line traces the path, which starts near Parque da Jaqueira and ends at Avenida Olinda. Below the map is an elevation profile showing altitude changes from 0 to 200 meters over a distance of 0 to 9 km. The analysis section includes two line graphs: one for speed (0 to 41.4 km/h) and one for estimated power (0 to 1.262 W), both plotted against distance from 0 to 9 km.

mapas estão em todo lugar



temos várias
soluções de
mapas

Google Maps APIs | Google D X Igor

Secure | https://developers.google.com/maps/

Google Maps APIs Início Documentação Preços e planos Pesquisa TODOS OS PRODUTOS

Milhões de sites e aplicativo usam as Google Maps APIs para produzir experiências de localização incríveis para os usuários.

PRIMEIROS PASSOS VER PLANOS E PREÇOS

Google Maps para todas as plataformas

As Google Maps APIs estão disponíveis para Android, iOS, navegadores e via serviços web HTTP.

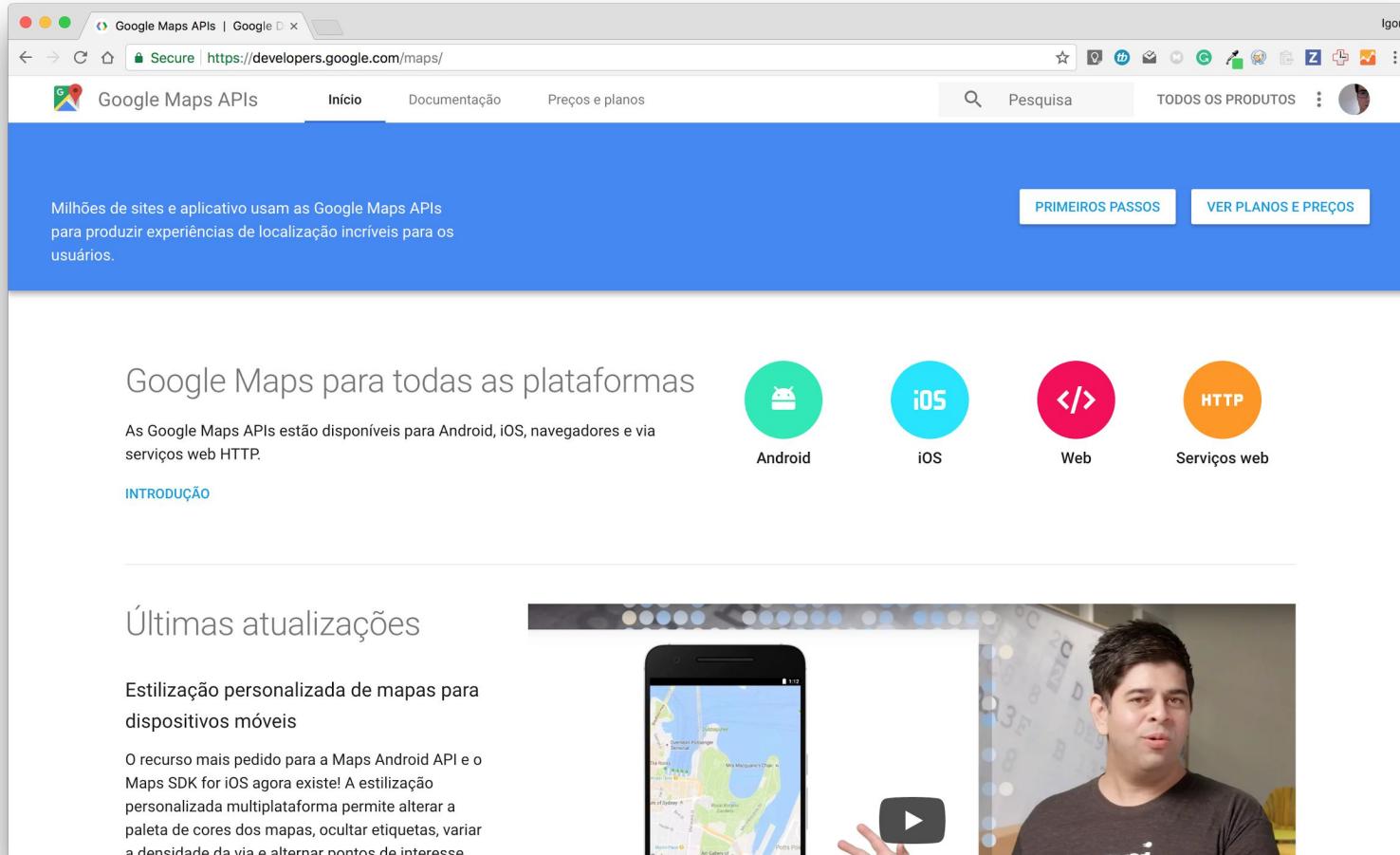
[INTRODUÇÃO](#)

Últimas atualizações

Estilização personalizada de mapas para dispositivos móveis

O recurso mais pedido para a Maps API para Android e o Maps SDK for iOS agora existe! A estilização personalizada multiplataforma permite alterar a paleta de cores dos mapas, ocultar etiquetas, variar a densidade da via e alternar pontos de interesse.

Android iOS Web Serviços web



API - OpenStreetMap Wiki x Igor

← → C ⌂ wiki.openstreetmap.org/wiki/API

Apt português do Brasil Crie uma conta Entrar



Página Discussão Ler Ver código-fonte Ver histórico Pesquisa

API

Available languages — API Other languages — Help us translate this wiki

Deutsch · English · español · português · Tiếng Việt

OpenStreetMap has an **Editing API** for fetching and saving raw geodata from/to the OpenStreetMap database — this is the entry page for the documentation. If you just want to embed a map into a webpage, you don't want this API. Use a [Web Map Framework](#) instead. Alternatively, consider the [Overpass API](#) which provides read-only API access.

Índice [ocultar]

- 1 REST specifications for the editing API
- 2 Instances
- 3 Implementations and scripting
- 4 Terms of use
- 5 Summaries of editing API changes
- 6 Links

REST specifications for the editing API

- **API v0.6** - (**currently used**, as of April 2009)
- **API-v0.5** (no longer used as of April 2009); *though this document may still be of use*
- **API-v0.4** (no longer used as of October 2007)
- **API-v0.3** (no longer used as of May 2007)

We are labeling wiki pages `{{Not 0.6 compatible}}` if they describe something which does not, or may not work with the 0.6 API version.

Instances

See [Databases and data access APIs](#)

Implementations and scripting

The current full serverside implementation is the [Rails port](#).

For other uses, see [Develop/Frameworks](#).

Mapbox x Igor

Secure | https://www.mapbox.com

mapbox Products Documentation About Pricing Blog Sign in

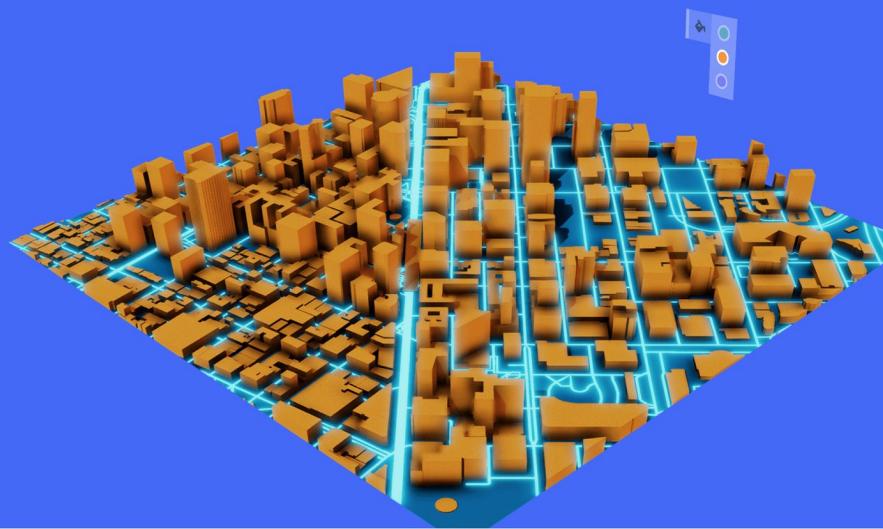
Design a custom map in seconds with Cartogram >

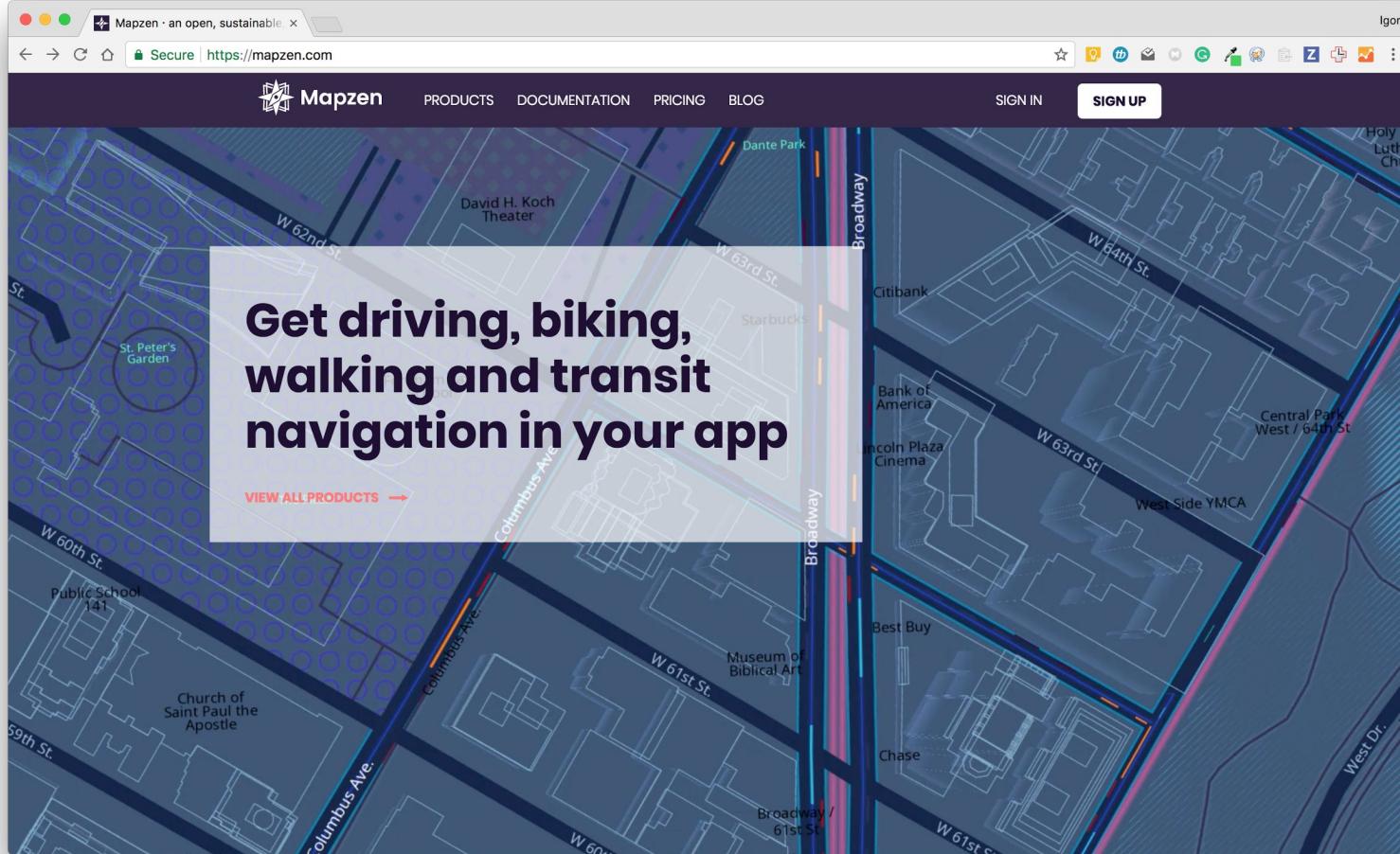
Build experiences for exploring the world

Add location into any application with our mapping, navigation, and location search SDKs

[Get a free API key](#) or [contact sales](#)

Supports





Map API Services for Every Need

Secure | https://www.microsoft.com/en-us/maps/choose-your-bing-maps-api

Microsoft Cloud Mobility Productivity

Bing Maps Get Started Licensing Developer Documentation Support Contact Us REQUEST QUOTE

Search Microsoft.com

Igor

Choose your API

Choose from multiple Bing Maps APIs to meet your development needs.



Explore the different map APIs available

The Bing Maps platform provides multiple API options for your application including Web Control, a Windows Store apps control, a WPF control, REST Services, and Spatial Data Services. Use the information below as well as at MSDN to help determine which Bing Maps API best suits your needs.

HERE Map APIs - HERE Devlo x Igor

Secure | https://developer.here.com/lp/mapAPIs?cid=Other-Google-MM-T4-Dev-Competitors-E&utm_medium=paidsearch&utm_campaign=...

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HERE JavaScript & REST APIs

Fast, flexible access to map data and functionality. Integrate interactive maps and advanced HERE features into your applications.

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Get your apps moving with HERE JavaScript & REST APIs

Rich location features and functions are unlocked through maps, directions, places, traffic and guidance components. Sign up now and [get your free API key](#)

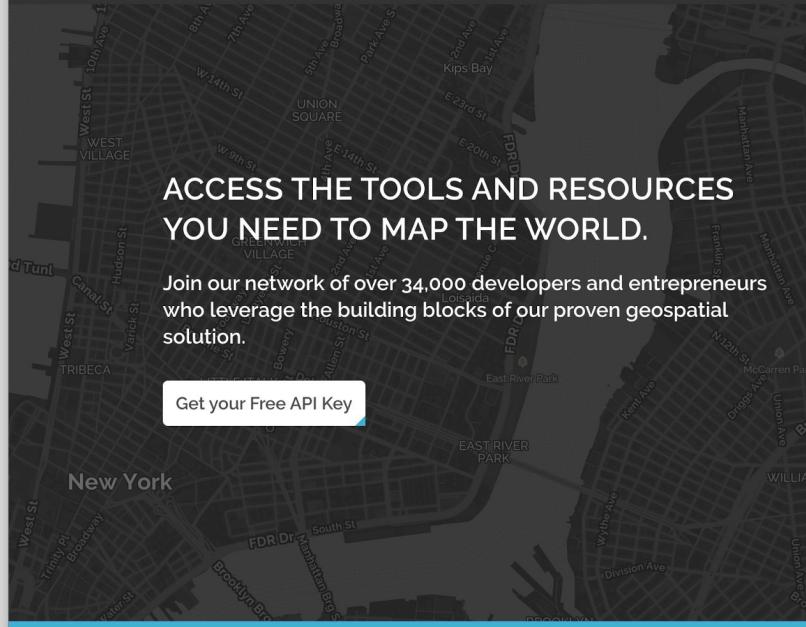
MapQuest Developer Network Igor

Secure | <https://developer.mapquest.com>

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ACCESS THE TOOLS AND RESOURCES YOU NEED TO MAP THE WORLD.

Join our network of over 34,000 developers and entrepreneurs who leverage the building blocks of our proven geospatial solution.

Get your Free API Key

```
L.mapquest.key = 'KEY';
var baseLayer = L.mapquest.tileLayer('dark');

L.mapquest.geocoding().geocode(['New York, NY'], showMap);

function showMap(err, data) {
    var map = createMap();
    map.addControl(L.mapquest.control());
    addLayerControl(map);
}

function createMap() {
    var map = L.mapquest.map('map', {
        center: [40.7237, -73.9825],
        zoom: 14,
        layers: baseLayer
    });
    return map;
}

function addLayerControl(map) {
    L.control.layers({
        'Map': L.mapquest.tileLayer('map'),
        'Satellite': L.mapquest.tileLayer('satellite'),
        'Hybrid': L.mapquest.tileLayer('hybrid'),
        'Light': L.mapquest.tileLayer('light'),
        'Dark': baseLayer
    }, {}, { position: 'topleft' }).addTo(map);
}
```

CARTO — Location Intelligence

Secure | https://carto.com

Check out our new research report [The State of Location Intelligence in 2018](#)

CARTO

Products Solutions Resources Pricing Blog

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UNLOCK THE POTENTIAL OF YOUR LOCATION DATA

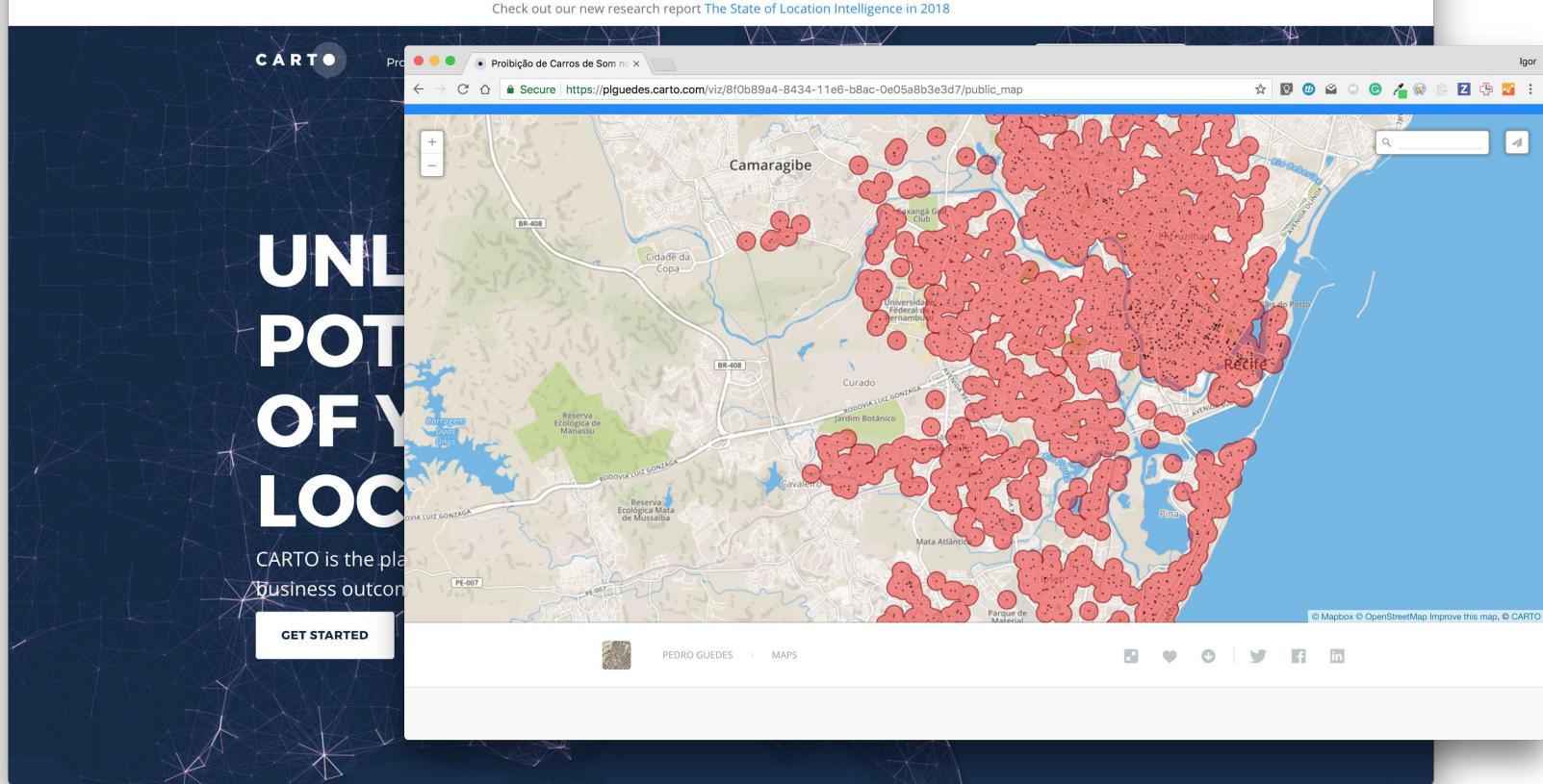
CARTO is the platform for turning location data into business outcomes.

GET STARTED

WATCH OVERVIEW VIDEO

Igor

Check out our new research report [The State of Location Intelligence in 2018](#)



soluções do lado do
cliente

OpenLayers - Welcome

openlayers.org

OpenLayers

Docs Examples API Code

A high-performance, feature-packed library for all your mapping needs.

LATEST

OpenLayers v4.4.2 is here! Check out the [docs](#) and the [examples](#) to get started. The full distribution can be downloaded from the [release page](#). If you've come here looking for OpenLayers 2.x information, you'll find everything you need on the [2.x page](#).

OVERVIEW

OpenLayers makes it easy to put a dynamic map in any web page. It can display map tiles, vector data and markers loaded from any source. OpenLayers has been developed to further the use of geographic information of all kinds. It is completely free, Open Source JavaScript, released under the 2-clause BSD License (also known as the FreeBSD).

FEATURES

Tiled Layers

Pull tiles from OSM, Bing, MapBox, Stamen, and any other XYZ source you can find. OGC mapping services and untiled layers also supported.

Cutting Edge, Fast & Mobile Ready

Leverages Canvas 2D, WebGL, and all the latest greatness from HTML5. Mobile support out of the box. Build lightweight custom profiles with just the components you need.

Vector Layers

Render vector data from GeoJSON, TopoJSON, KML, CML, Mapbox vector tiles, and other formats.

Easy to Customize and Extend

Style your map controls with straight-forward CSS. Hook into different levels of the API or use 3rd party libraries to customize and extend functionality.

Igor

Documentation - Leaflet - a Ja × Igor

leafletjs.com/reference-1.2.0.html



an open-source JavaScript library
for mobile-friendly interactive maps

Twitter GitHub

Overview Tutorials Docs Download Plugins Blog

Leaflet API reference

This reference reflects **Leaflet 1.2.0**. Check [this list](#) if you are using a different version of Leaflet.

Map	UI Layers	Other Layers	Utility	Base Classes
Usage example Creation Options Events	Marker Popup Tooltip	LayerGroup FeatureGroup GeoJSON GridLayer	Browser Util Transformation LineUtil PolyUtil	Class Evented Layer Interactive_layer
Map Methods	Raster Layers	Basic Types	DOM Utility	Control Handler Projection CRS Renderer
Modifying map state Getting map state Layers and controls Conversion methods	TileLayer TileLayer.WMS ImageOverlay VideoOverlay	LatLng LatLngBounds Point Bounds	DomEvent DomUtil PosAnimation	Misc

Leaflet is the leading
open-source JavaScript
library for mobile-friendly
interactive maps.

completo,
mobile-friendly
e leve.

Layers Out of the Box

- Tile layers, WMS
- Markers, Popups
- Vector layers: polylines, polygons, circles, rectangles
- Image overlays
- GeoJSON

Interaction Features

- Drag panning with inertia
- Scroll wheel zoom
- Pinch-zoom on mobile
- Double click zoom
- Zoom to area (shift-drag)
- Keyboard navigation
- Events: click, mouseover, etc.
- Marker dragging

Visual Features

- Zoom and pan animation
- Tile and popup fade animation
- Very nice default design for markers, popups and map controls
- Retina resolution support

Customization Features

- Pure CSS3 popups and controls for easy restyling
- Image- and HTML-based markers
- A simple interface for custom map layers and controls
- Custom map projections (with EPSG:3857/4326/3395 out of the box)
- Powerful OOP facilities for extending existing classes

Performance Features

- Hardware acceleration on mobile makes it feel as smooth as native apps
- Utilizing CSS3 features to make panning and zooming really smooth
- Smart polyline/polygon rendering with dynamic clipping and simplification makes it very fast
- Modular build system for leaving out features you don't need
- Tap delay elimination on mobile

Map Controls

- Zoom buttons
- Attribution
- Layer switcher
- Scale

Browser Support

Desktop

- Chrome
- Firefox
- Safari 5+
- Opera 12+
- IE 7-11

Mobile

- Safari for iOS 7+
- Android browser 2.2+, 3.1+, 4+
- Chrome for mobile
- Firefox for mobile
- IE10+ for Win8 devices

Misc

- Extremely lightweight
- No external dependencies

plugins
e documentação bem
escrita

Leaflet Plugins

While Leaflet is meant to be as lightweight as possible, and focuses on a core set of features, an easy way to extend its functionality is to use third-party plugins. Thanks to the awesome community behind Leaflet, there are literally hundreds of nice plugins to choose from.

Tile & image layers	Overlay Display	Map interaction	Miscellaneous
Basemap providers	Markers & renderers	Layer switching controls	Geoprocessing
Basemap formats	Overlay animations	Interactive pan/zoom	Routing
Non-map base layers	Clustering/decluttering	Bookmarked pan/zoom	Geocoding
Tile/image display	Heatmaps	Fullscreen	Plugin collections
Tile load	DataViz	Minimaps & synced maps	
Vector tiles		Measurement	Integration
	Overlay interaction	Mouse coordinates	
Overlay data		Events	Frameworks & build systems
	Edit geometries	User interface	3rd party
Overlay data formats	Time & elevation	Print/export	
Dynamic data loading	Search & popups	Geolocation	
Synthetic overlays	Area/overlay selection		Develop your own
Data providers			

Leaflet API reference

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Map	UI Layers	Other Layers	Utility	Base Classes
Usage example	Marker	LayerGroup	Browser	Class
Creation	Popup	FeatureGroup	Util	Evented
Options	Tooltip	GeoJSON	Transformation	Layer
Events		GridLayer	LineUtil	Interactive layer
	Raster Layers		PolyUtil	Control
Map Methods		Basic Types		Handler
	TileLayer		DOM Utility	Projection
Modifying map state	TileLayer.WMS	LatLng		CRS
Getting map state	ImageOverlay	LatLngBounds	DomEvent	Renderer
Layers and controls	VideoOverlay	Point	DomUtil	
Conversion methods		Bounds	PosAnimation	Misc
Other methods	Vector Layers	Icon	Draggable	
		DivIcon		Event objects
Map Misc	Path			global switches
	Polyline	Controls		noConflict
Properties	Polygon			version
Panes	Rectangle	Zoom		
	Circle	Attribution		
	CircleMarker	Layers		
	SVG	Scale		
	Canvas			

GeoJSON

GEOJSON

GeoJSON is a format for encoding a variety of geographic data structures.

```
{  
  "type": "Feature",  
  "geometry": {  
    "type": "Point",  
    "coordinates": [125.6, 10.1]  
  },  
  "properties": {  
    "name": "Dinagat Islands"  
  }  
}
```

GeoJSON supports the following geometry types: `Point`, `LineString`, `Polygon`, `MultiPoint`, `MultiLineString`, and `MultiPolygon`. Geometric objects with additional properties are `Feature` Objects. Sets of features are contained by `FeatureCollection` objects.

The GeoJSON Specification (RFC 7946)

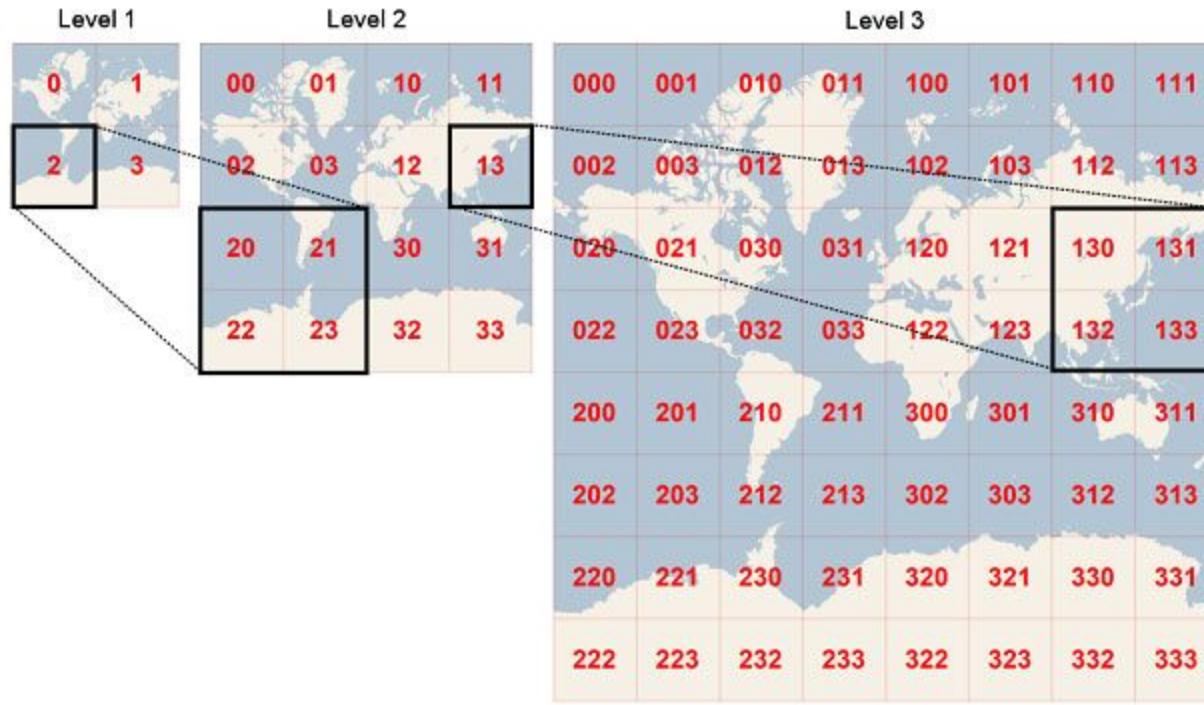
In 2015, the Internet Engineering Task Force (IETF), in conjunction with the original specification authors, formed a [GeoJSON WG](#) to standardize GeoJSON. [RFC 7946](#) was published in August 2016 and is the new standard specification of the GeoJSON format, replacing the 2008 GeoJSON specification.

<http://geojsonlint.com>

<http://geojson.io/>

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Tiles



World maps you can self-host x Igor

Secure | https://openmaptiles.org

 OpenMapTiles.org

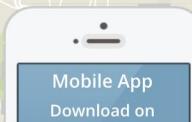
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Arlington
Orange
Kearny
Roseville
East Newark
Harrison
Newark
NEW JERSEY TURNPIKE
Croxton
Hoboken
Croton
Jersey City
New York
U-Thant Island
Long Island Expressway
Oak Island Junction
West Bergen
Communipaw
Greenville
Ellis Island
Governors Island
NEW JERSEY TURNPIKE NEWARK Bay EXTENSION
Try different styles
KT Basic OSM Bright Positron Port Johnston Dark Matter

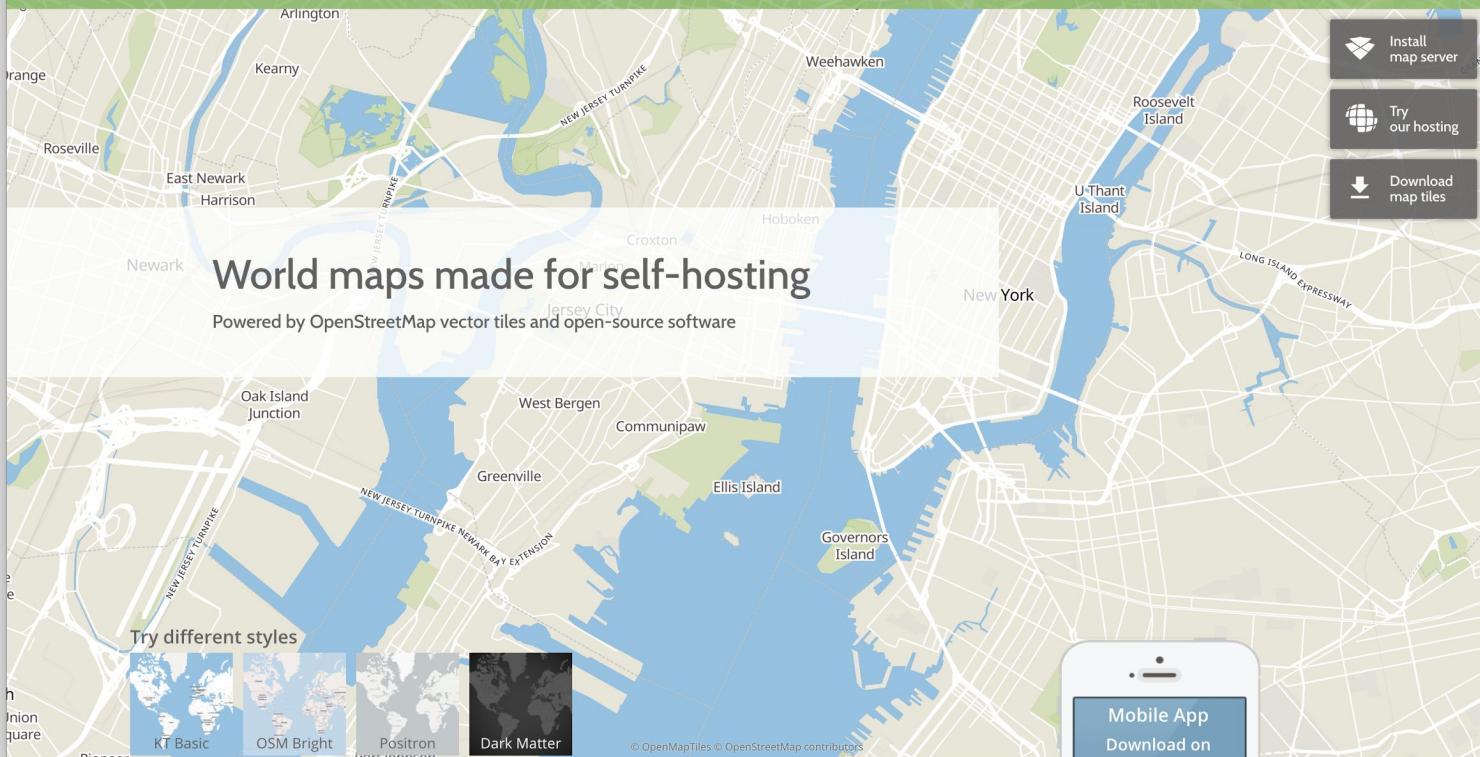
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World maps made for self-hosting
Powered by OpenStreetMap vector tiles and open-source software

Union square
Pioneer

Mobile App Download on 

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Exercício

Exercício

<https://github.com/igormatos/techtalk-leaflet>

Demonstração / aplicação

- Tiles : <http://leaflet-extras.github.io/leaflet-providers/preview/>
- d3 v4 : <http://d3js.org/d3.v4.js>
- d3-legend.js : <https://cdnjs.cloudflare.com/ajax/libs/d3-legend/2.24.0/d3-legend.js>
- turf.js : <https://npmcdn.com/@turf/turf/turf.min.js>
- leaflet.js : <https://unpkg.com/leaflet@1.2.0/dist/leaflet.js>
- leaflet.css : <https://unpkg.com/leaflet@1.2.0/dist/leaflet.css>
- BDD geojson :
[https://drive.google.com/a/cin.ufpe.br/file/d/0ByVBRYhrejEZbFJ6QUNjUW9mbnM/view?
usp=sharing](https://drive.google.com/a/cin.ufpe.br/file/d/0ByVBRYhrejEZbFJ6QUNjUW9mbnM/view?usp=sharing)
- Google is watching you : <https://maps.google.com/locationhistory/b/0>
- <https://www.latlong.net/degrees-minutes-seconds-to-decimal-degrees>

Dúvidas?



