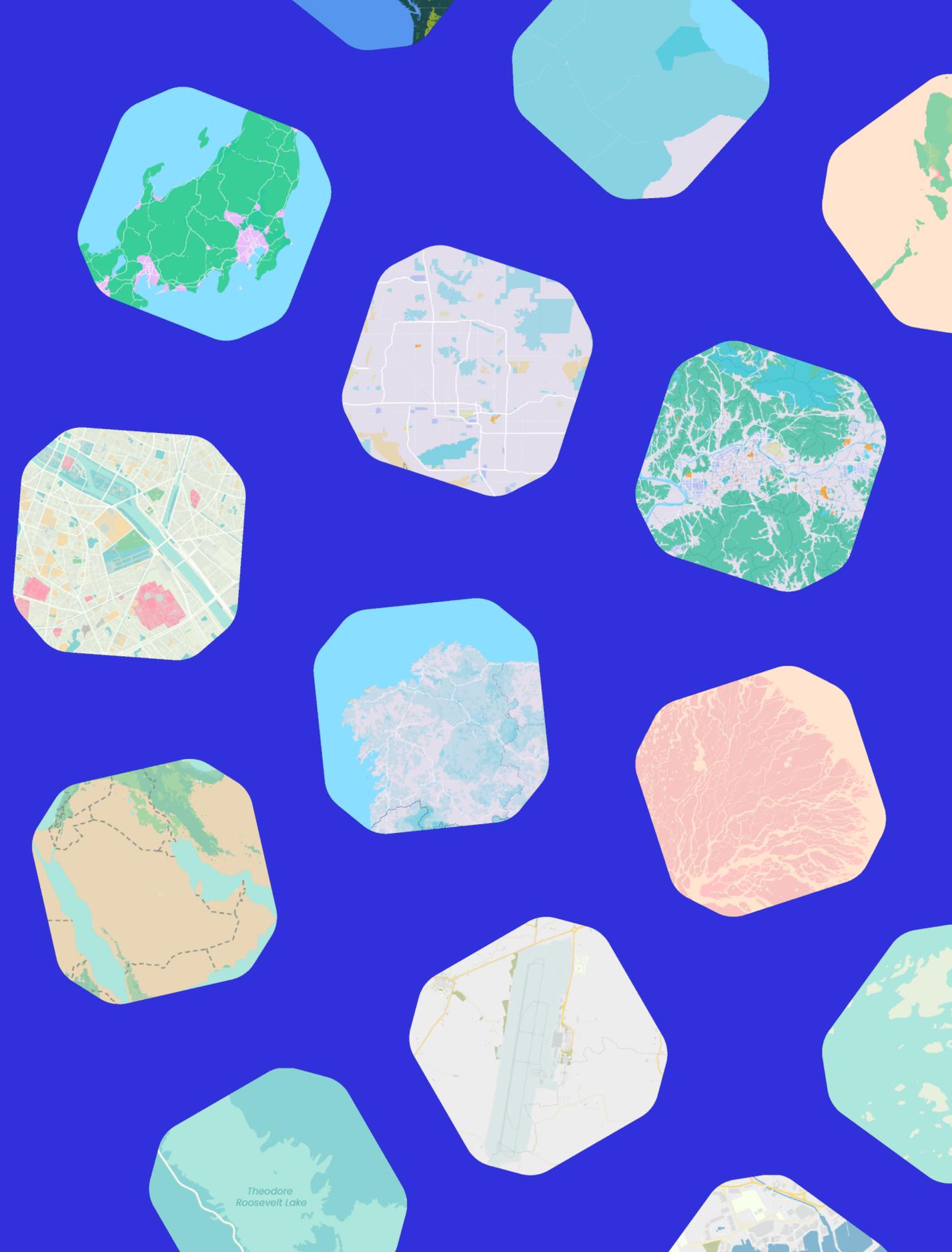


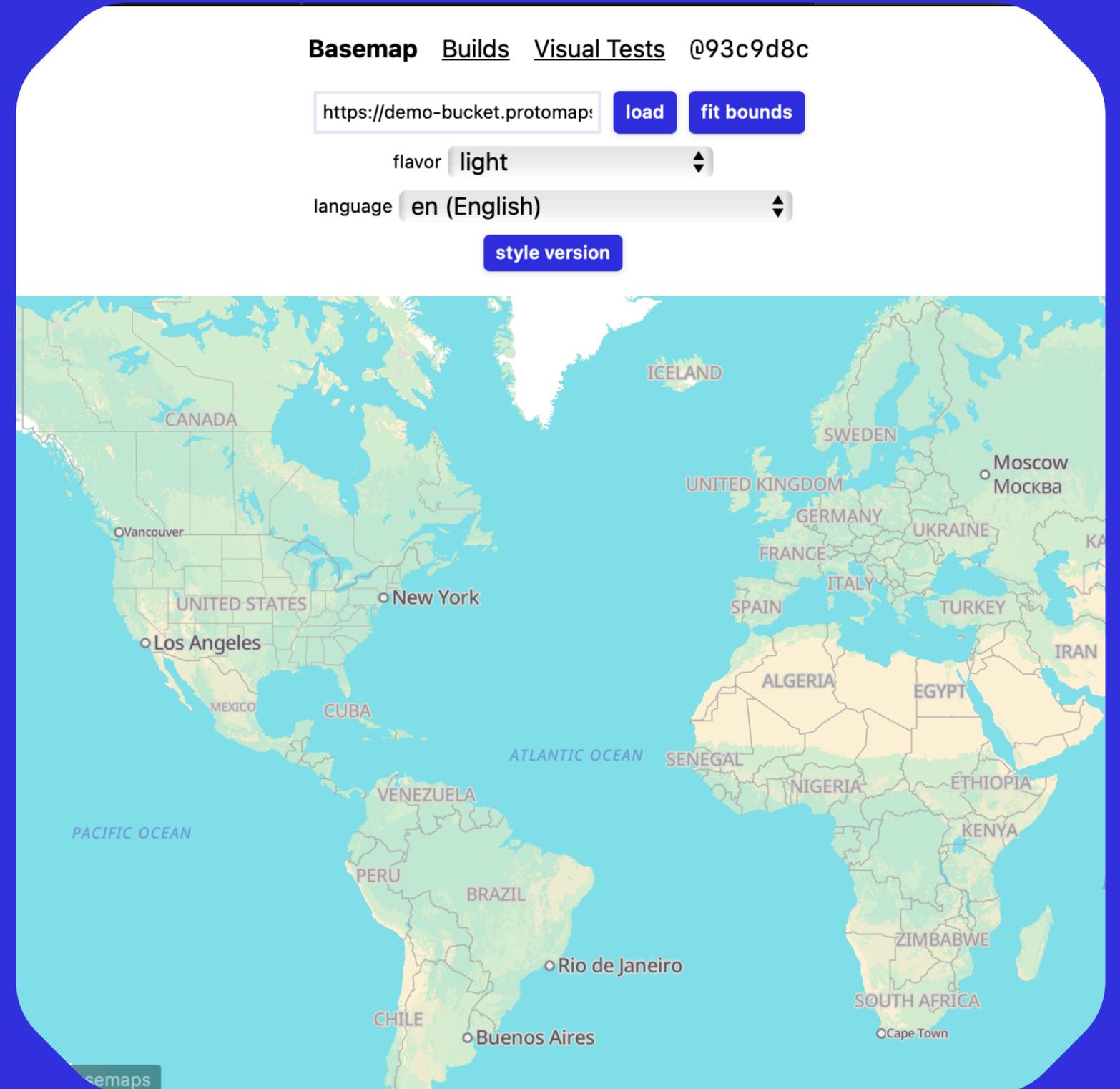
Why do new open technologies succeed?

The Story of Protomaps and PMTiles



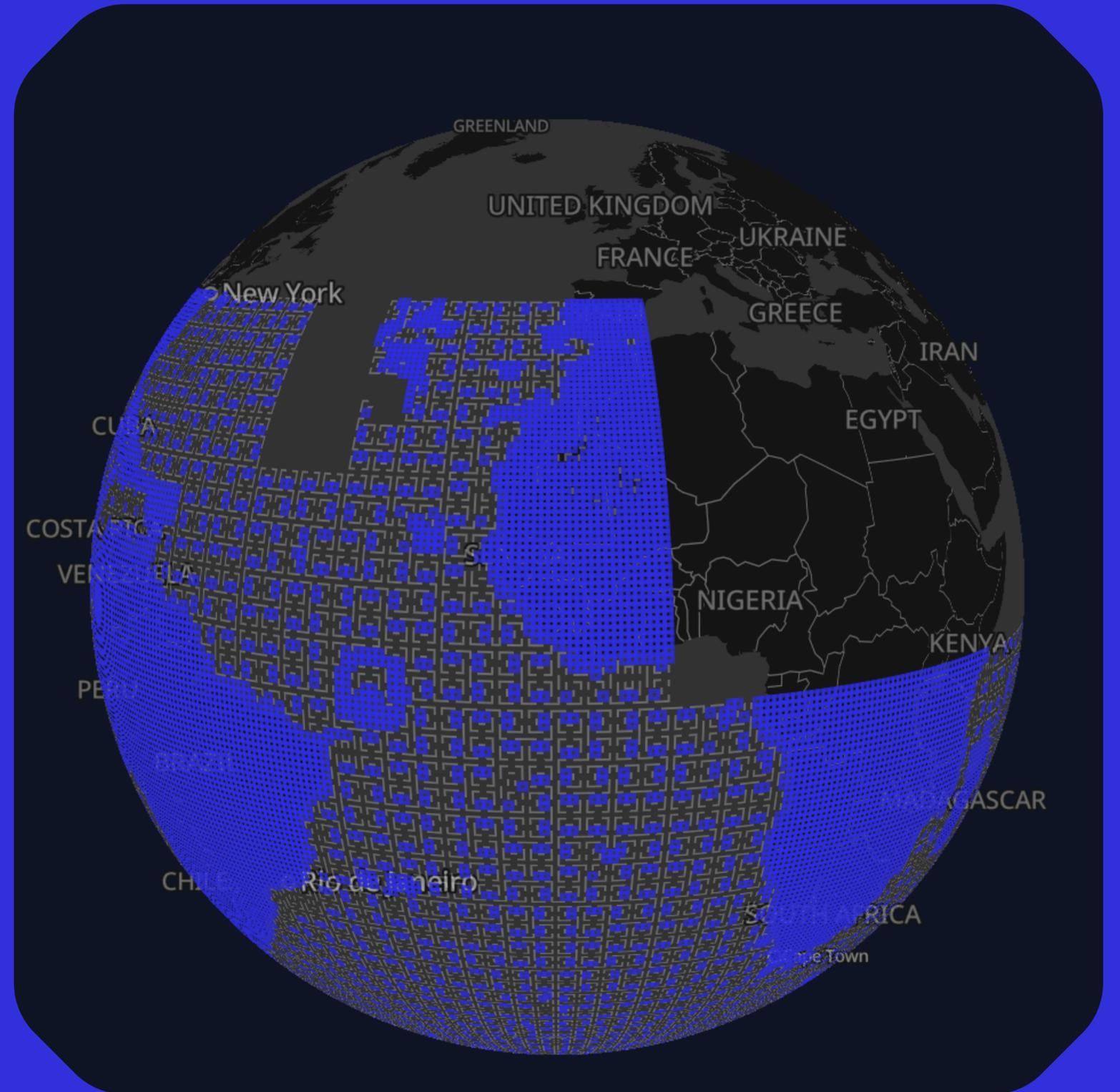
Protomaps Project

- **Open format**, PMTiles.
- **Ecosystem** of tools for creating and serving PMTiles.
- Distribution of tileset based on **OpenStreetMap**.



PMTiles

- Public domain specification.
- Store large tilesets as static files on cloud storage.
- Each tile is an HTTP Range Request.



Key Topic

Why is Protomaps a successful project?



🤔 Why is Protomaps a successful project?

- Because the project **makes money**?

The project is **open source** with no license fees.

The project replaces paid commercial APIs.



Why is Protomaps a successful project?

- ~~Because the project makes money?~~
- Because the project has **many features and maintainers?**

The project has few features. The focus is tileset creation and serving.

There are few maintainers and contributors.

We prefer to maintain a **small project**.

GDAL

github.com/OSGeo/gdal

2,000,000 LOC

Contributors 577



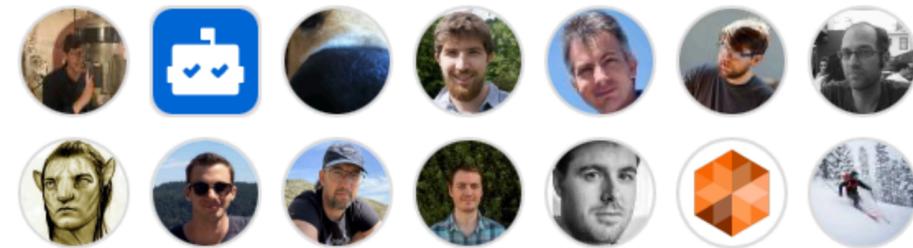
[+ 563 contributors](#)

PMTiles

github.com/protomaps/PMTiles

~8,500 LOC

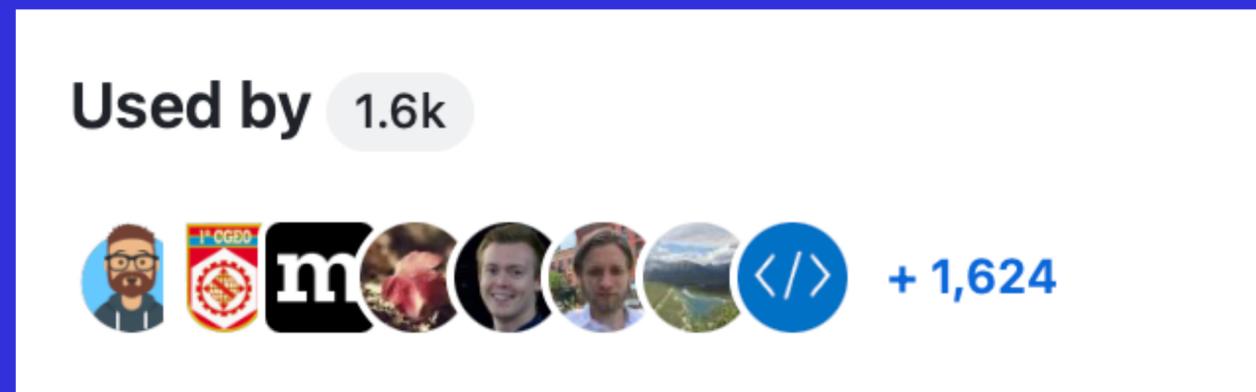
Contributors 39



[+ 25 contributors](#)

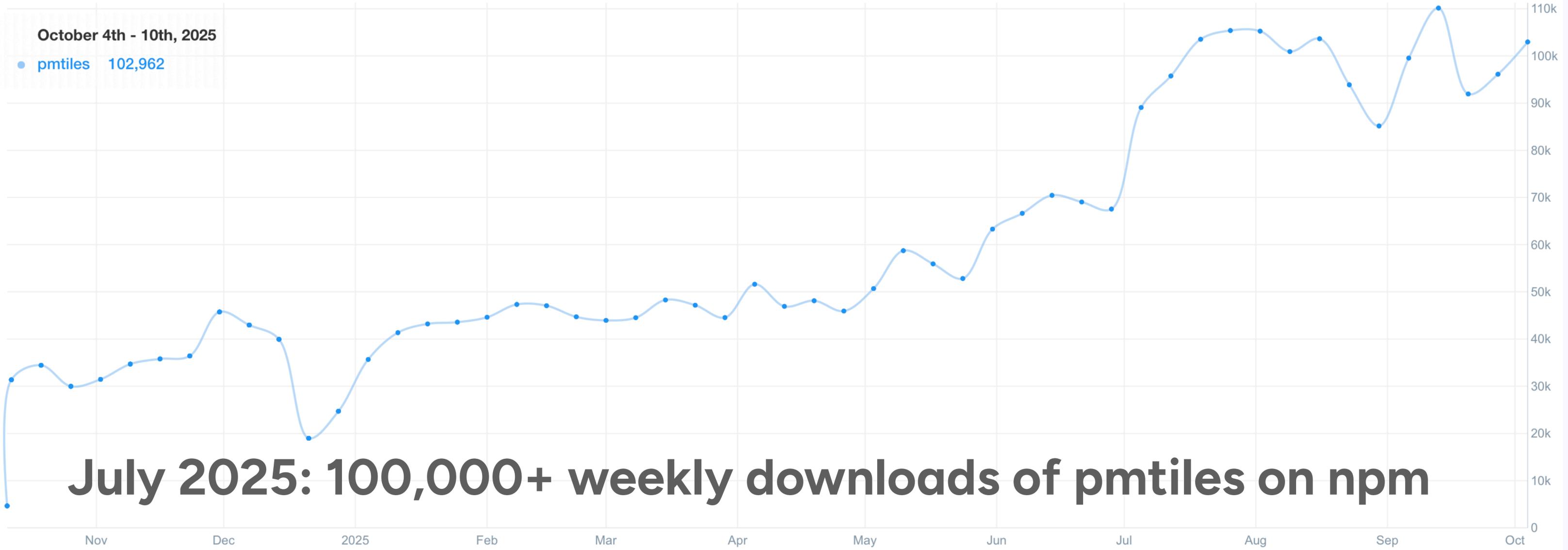
Why is Protomaps a successful project?

- ~~Because the project makes money?~~
- ~~Because the project has many features and maintainers?~~
- Because the project is **widely adopted?**



Source: GitHub

[this chart](#) or check out [styled-components](#), [@emotion/core](#), [jss](#), [emotion](#), [tailwindcss](#) [mobx](#), [redux](#), [immer](#), [immutable](#), [recoil](#) [@prisma/client](#), [typeorm](#), [drizzle-orm](#), [kysely](#), [knex](#), [sequelize](#), [pg](#), [slonik](#) [webpack](#), [rollup](#), [parcel-bundler](#), [vite](#), [snowpack](#) [@babel/core](#), [eslint](#), [rome](#), [jest](#) [gatsby](#), [next](#) [log4js](#), [winston](#), [bunyan](#), [morgan](#), [pino](#) [@chakra-ui/core](#), [@material-ui/core](#), [semantic-ui-react](#), [@fluentui/react](#), [@blueprintjs/core](#), [antd](#), [@adobe/react-spectrum](#) [lodash](#), [debug](#), [typescript](#) [express](#), [koa](#), [@hapi/hapi](#), [connect](#), [@nestjs/core](#), [fastify](#) [knex](#), [sequelize](#), [pg](#), [typeorm](#), [@prisma/client](#), [slonik](#) [react](#), [vue](#), [@angular/core](#), [ember-cli](#), [svelte](#), [angular](#)

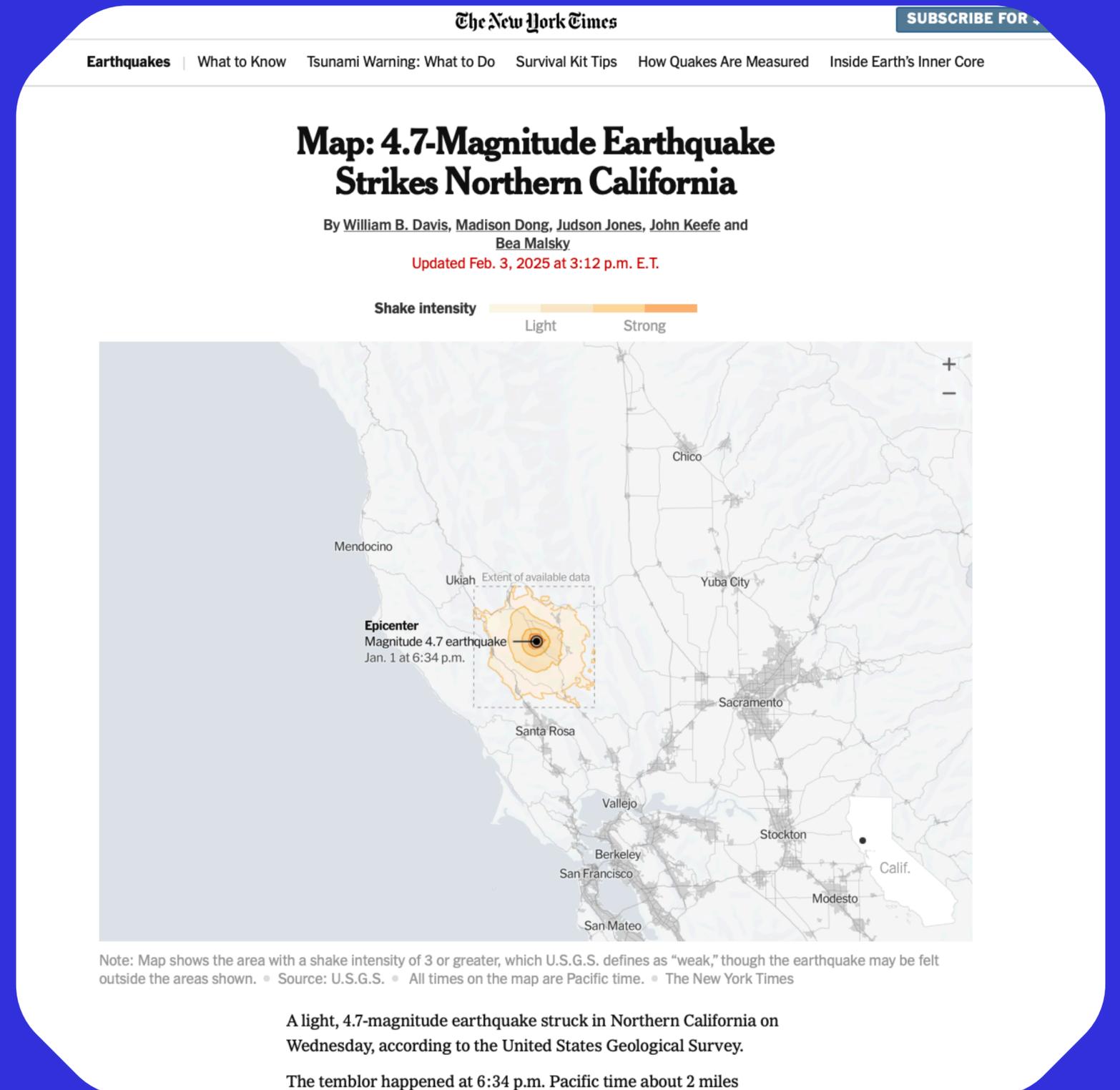


July 2025: 100,000+ weekly downloads of pmtiles on npm

Example

The New York Times

The New York Times serves PMTiles through a CDN to create weather and earthquake visualizations.

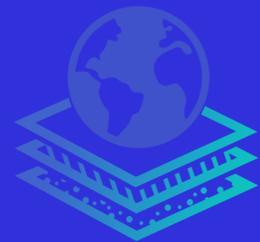


Example

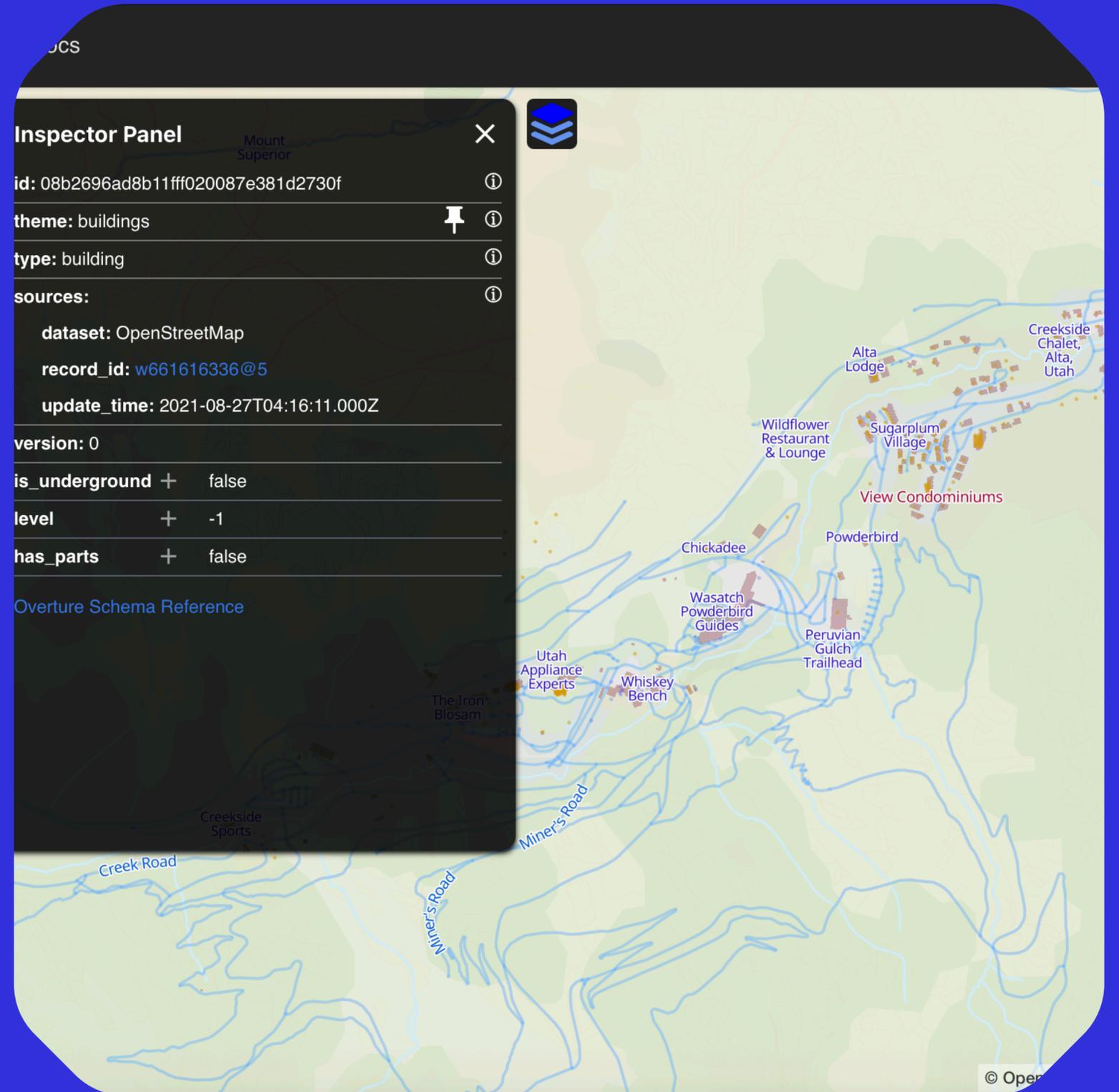
Overture Maps

Overture Maps visualizes
100GB+ of data using only
an S3 bucket.

explore.overturemaps.org



OVERTURE MAPS
FOUNDATION



Key Topic

Why do developers choose to use the project?

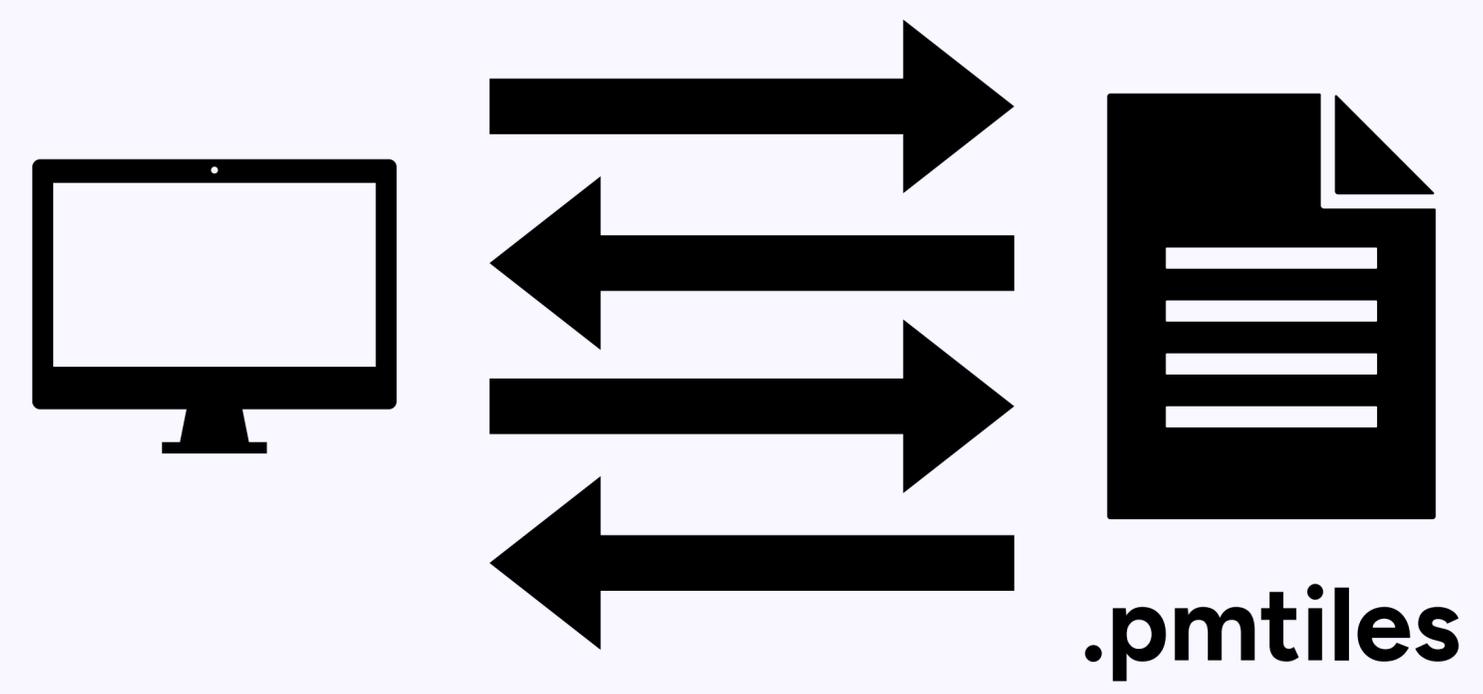
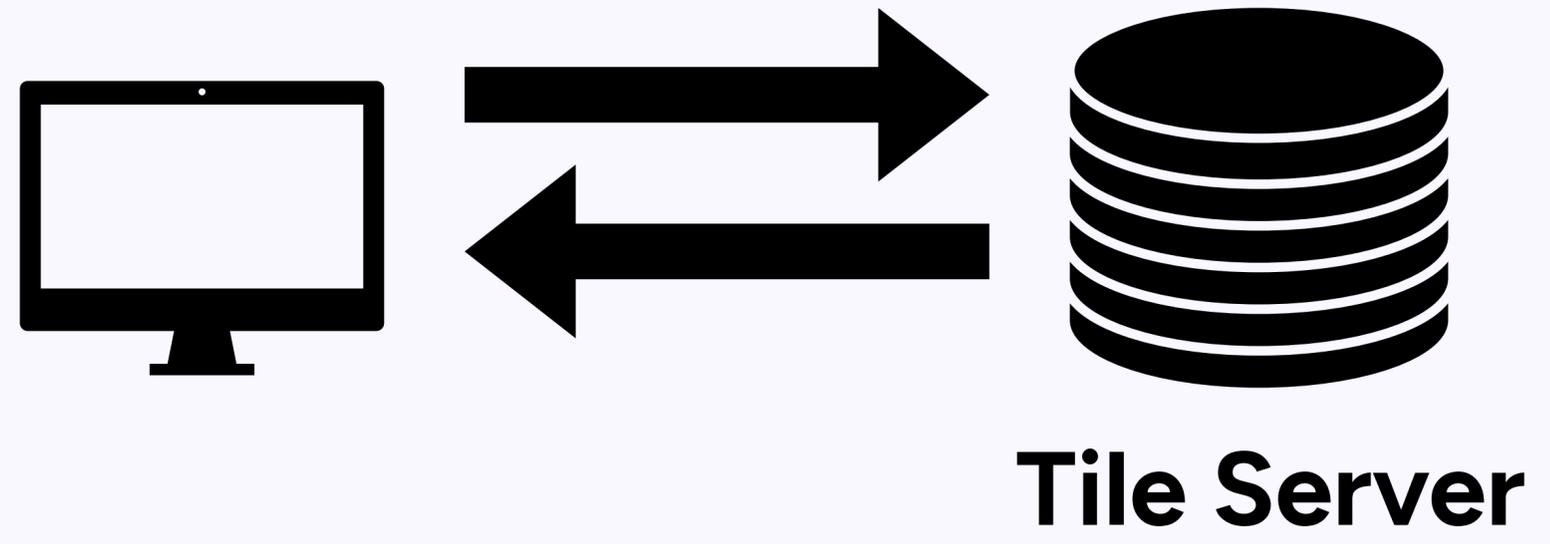


Idea

“I should use PMTiles because it's more optimized.”

PMTiles vs. Tile server

- In fact, reading PMTiles from cloud storage is often slower than using a tile server.
- Static storage may have higher latency.
- Reading the PMTiles header requires 1+ extra HTTP request.



Idea

~~"I should use PMTiles because it's more optimized."~~

Key Topic

Why do developers choose to use the project?



Why developers use Protomaps

1. **Simple developer experience**

**Please raise your hand if you
recognize this logo!**



Developer happiness: Ruby

- Matz created Ruby in the 1990s. Early versions of Ruby were slower than Python, Perl and PHP.
- Ruby was widely adopted because of the Ruby on Rails web framework.
- The Ruby design encouraged a culture of "**convention over configuration**" and test automation.

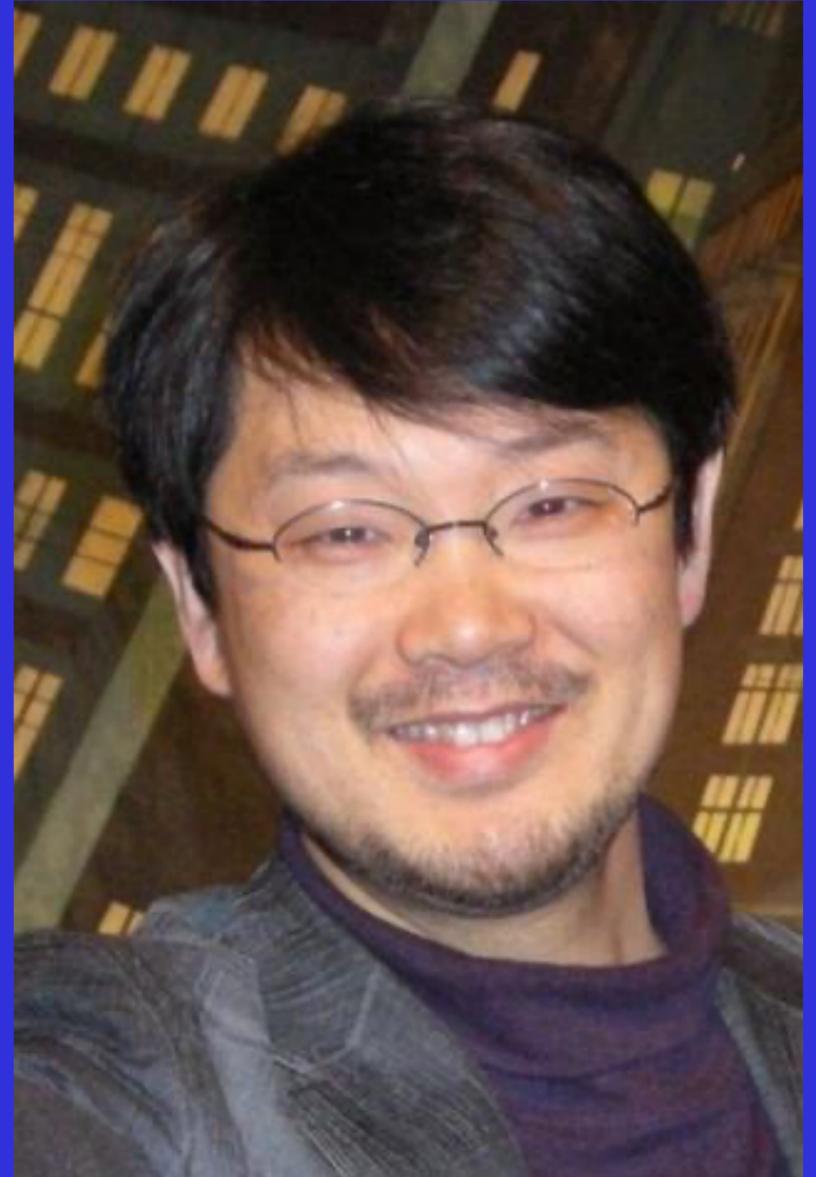
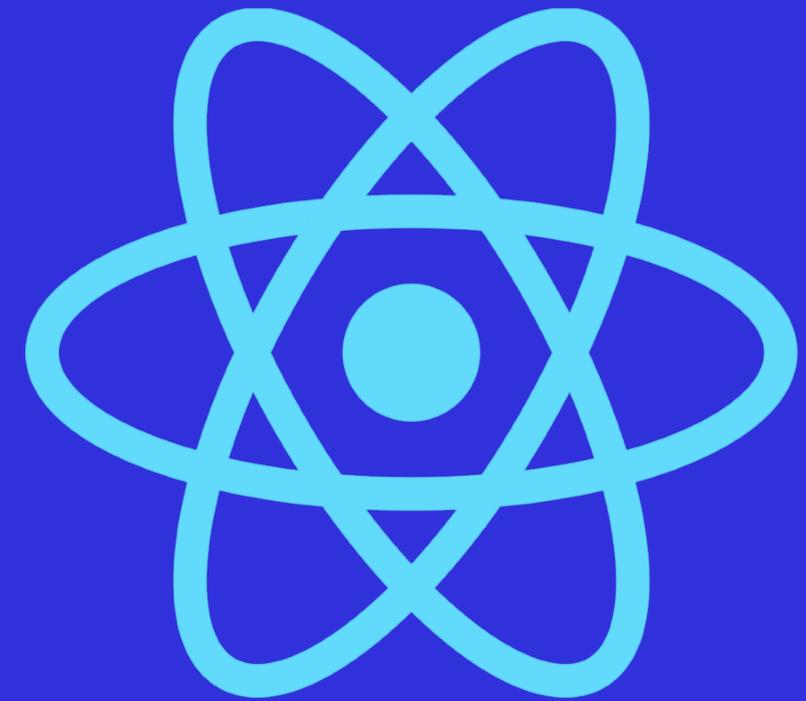


Photo: Cep21 @ Wikimedia

Developer happiness: React

- React created a **simpler abstraction** for building user interfaces.
- It was less efficient than alternatives, but led to a a better developer experience than DOM handling.



Developer happiness: PMTiles

1. PMTiles is a simple abstraction for tiles that **does not require a server.**
2. Although HTTP range requests and cloud storage can be slower, the **developer experience is improved.**

Developer happiness: PMTiles

1. The command line interface is a single binary.
2. The JavaScript libraries can be used with `<script>` tags and no bundler.
3. MapLibre integration is 3 lines of code. Tippecanoe outputs PMTiles.
4. Optimize for **how easy it is to start** using the project.

js

```
import { Protocol } from "pmtiles";
```

js

```
let protocol = new Protocol();  
maplibregl.addProtocol("pmtiles", protocol.tile);
```

json

```
{  
  "sources": {  
    "protomaps": {  
      "type": "vector",  
      "url": "pmtiles://https://example.com/example.pmtiles",  
    }  
  }  
}
```

Why developers use Protomaps

1. Simple developer experience
- 2. Brand communication**

**Please raise your hand if you
recognize this!**



Brand communication: Heroku

1. Heroku is a popular Platform as a Service created in 2007.
2. Developers around the world **recognize the “Heroku” brand** for easy web application deployment.





Source: Häagen-Dazs



pmtiles

Filter by

- <> Code 16.8k
- Repositories 263**
- Issues 1k
- Pull requests 2k
- Discussions 333
- Users 1
- More

Languages

JavaScript

HTML

263 results (246 ms)

Sort by: Best match

Save

protomaps/PMTiles

Unstar

Sponsor

Pyramids of map tiles in a single file on static storage

serverless pmtiles

TypeScript · 2.4k · Updated yesterday

maplibre/martin

Star

Sponsor

Blazing fast and lightweight PostGIS, MBtiles and PMtiles tile server, tile generation, and mbtiles tooling.

rust mapbox-gl vector-tiles maps

Brand communication: Protomaps

1. The project names “protomaps” and “pmtiles” were chosen to be unique and **easy to search for**.
2. Google, search engines, and LLMs are **part of the developer experience!**



Why developers use Protomaps

1. Simple developer experience
2. Brand communication
- 3. Bottom-up adoption**

Top-down adoption



Managers and CTOs



"We are paying an ESRI subscription,
so you must publish maps using
ArcGIS online."



Developers

Bottom-up adoption



Managers and CTOs



“We can publish maps using PMTiles,
on cloud storage we already use,
without needing new services!”



Developers

Adoption: Target audience

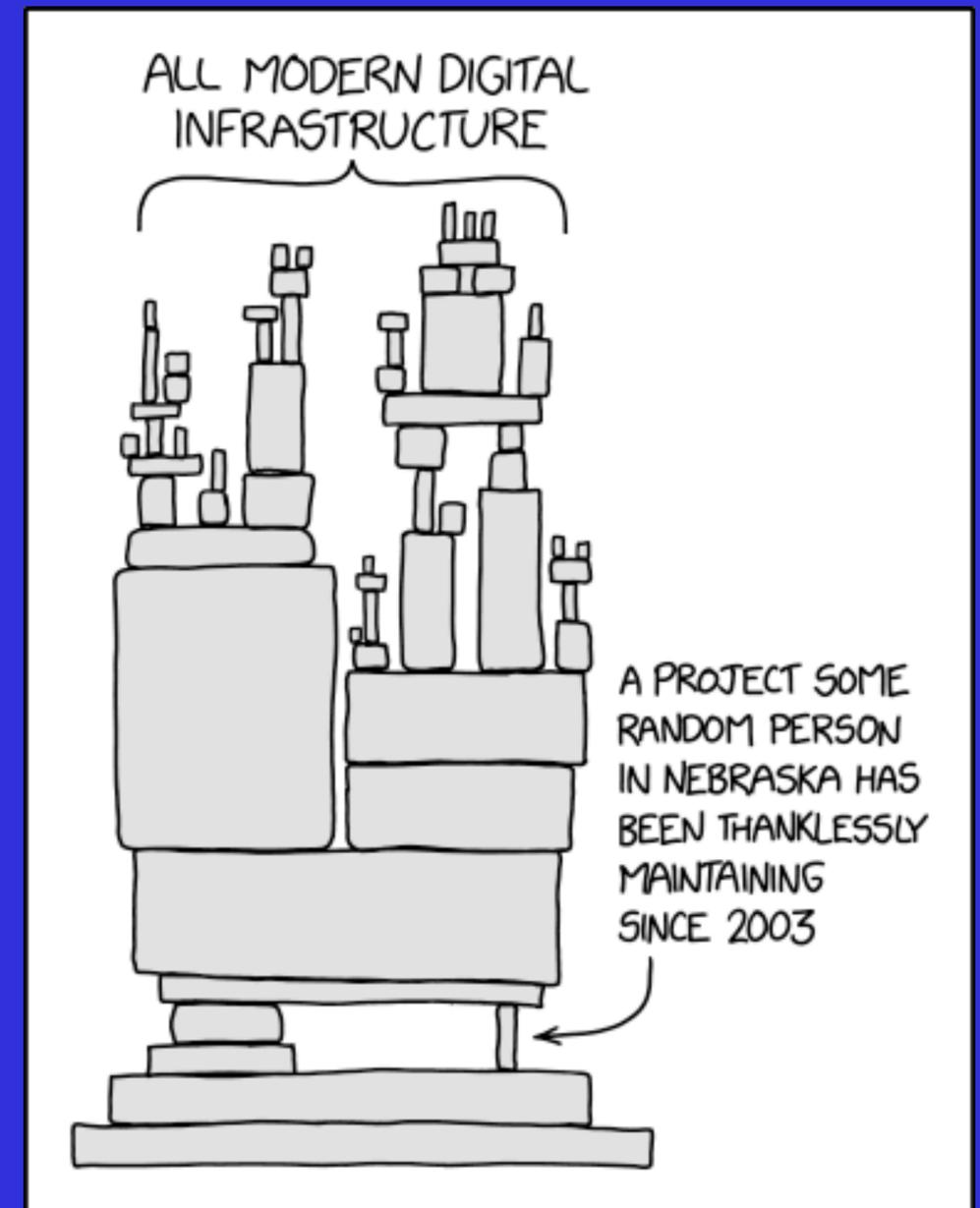
1. The **target audience** for Protomaps is web developers who do not want to use commercial APIs or servers.
2. If you are used to managing servers, or can afford commercial APIs, other solutions may be better.

Why developers use Protomaps

1. Simple developer experience
2. Brand communication
3. Bottom-up adoption
- 4. Outside innovation**

Outside innovation

- Adding more features to the project makes it **more difficult to maintain**.
- Instead, enable other developers to **independently create** other projects and services.

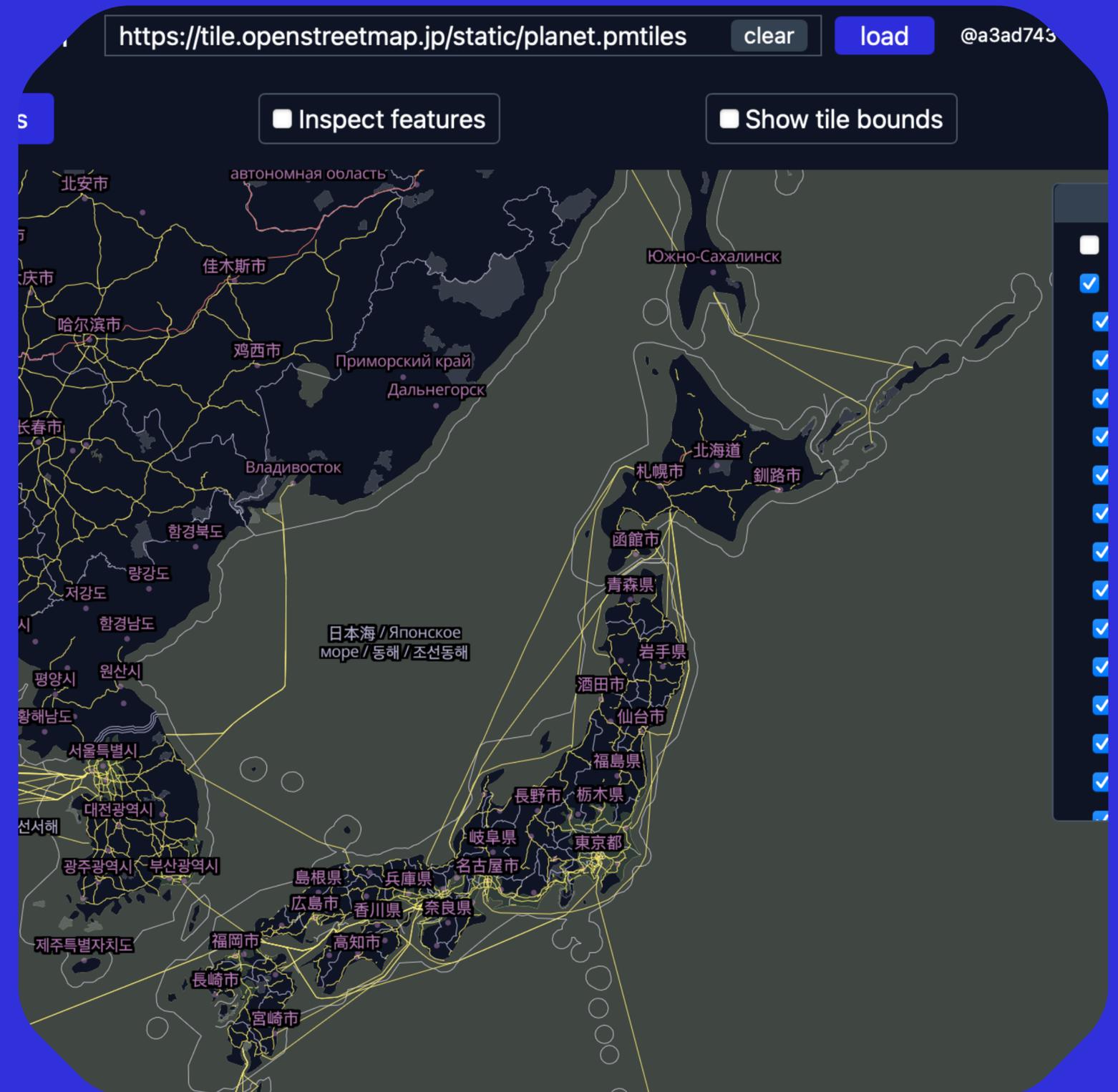


Source: xkcd

Outside Innovation

OSMF Japan

- Distribution of OpenStreetMap-based tiles from servers in Japan.
- Free to use, updated weekly.
- <https://tile.openstreetmap.jp/static>



Outside Innovation

pmtiles-rs

- Independent implementation of pmtiles in Rust.
- Used by the Martin tile server.
- <https://github.com/stadiamaps/pmtiles-rs>



Outside Innovation

Mapperhorn

- Creates and distribute .pmtiles of elevation around the world.
- Designed to work with MapLibre.
- <https://mapperhorn.com>



Lessons for open source projects

1. Performance and efficiency are important, but **not enough!**
Optimize for developer happiness.

2. Build a brand to communicate your project's unique qualities.

3. Design the project so it can be **adopted bottom-up** by developers.

4. Encourage outside developers to innovate around your project **independently and sustainably.**



ありがとうございます!

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