



How to get offline maps with an hybrid app ?

Hello!

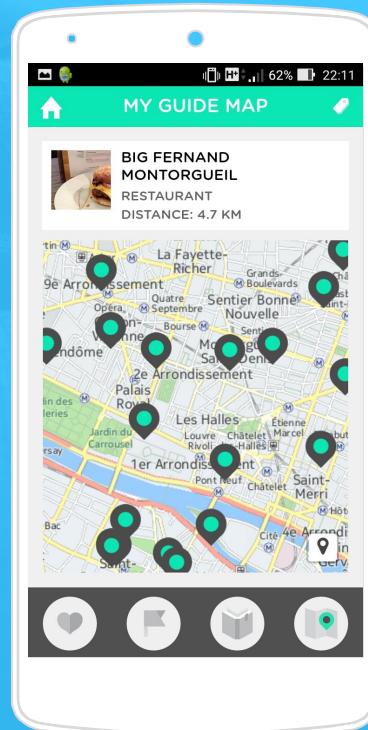
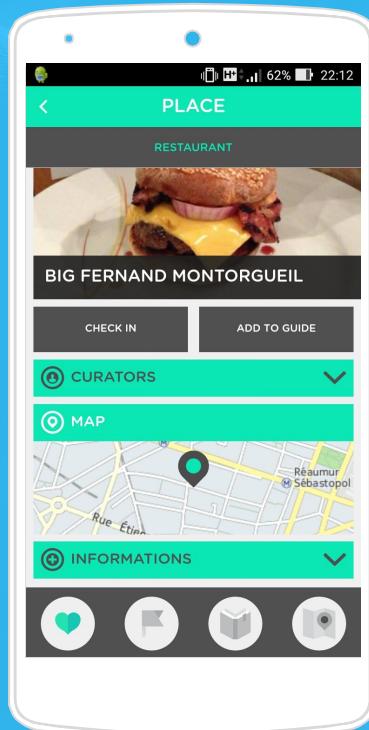
Benjamin MICHEL

You can find me at:
@benjmichel



peekily

an online and offline travel guide



Technologies



Parse

The Cloud Application Platform



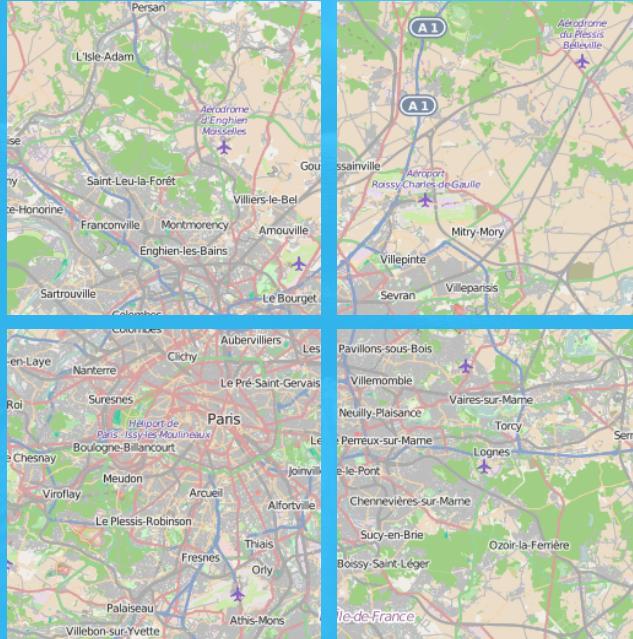
1. What is a map ?





A map is
set of tiles

A map is a set of tiles



Search

Where am I? Go

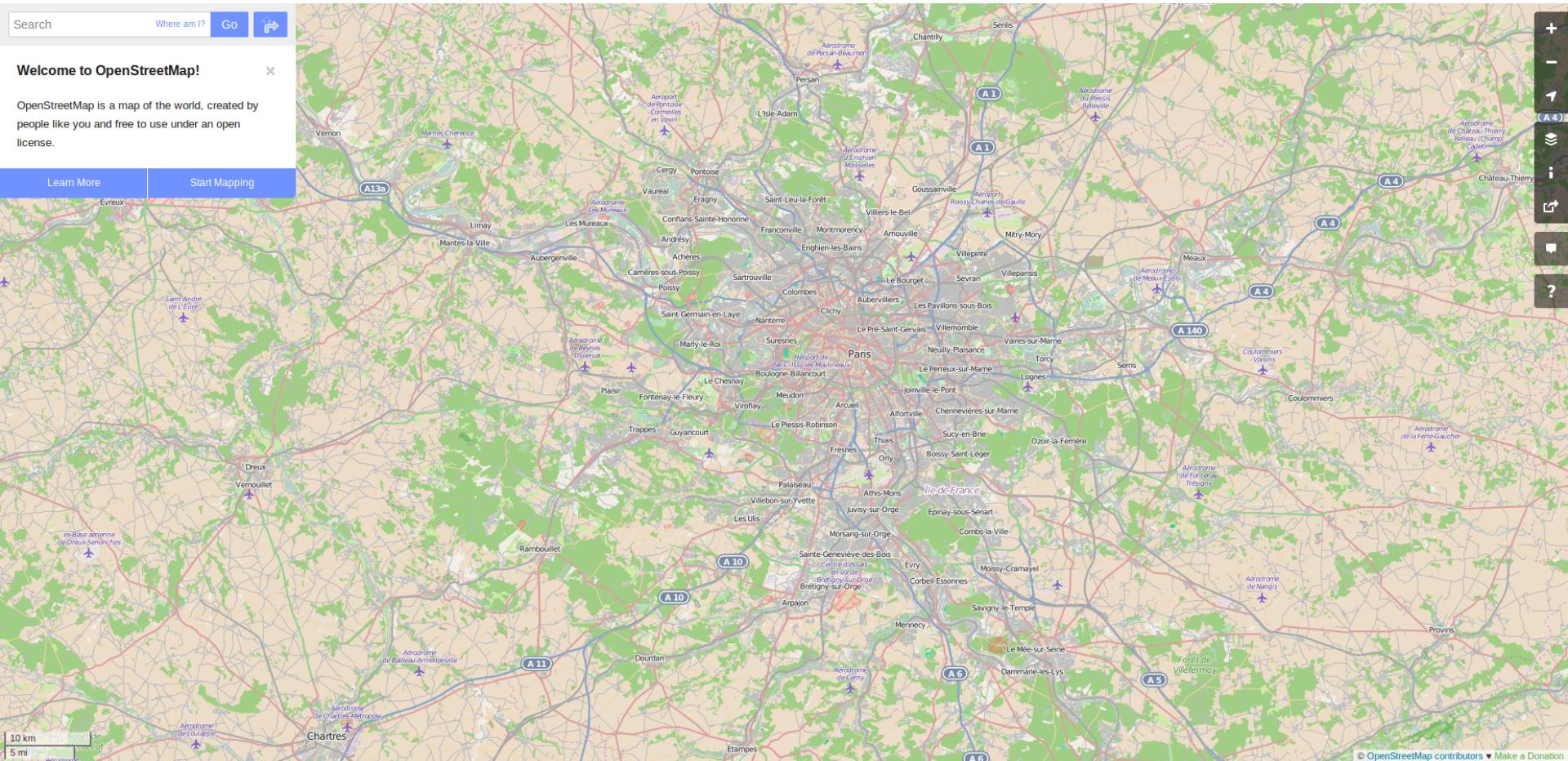


Welcome to OpenStreetMap!

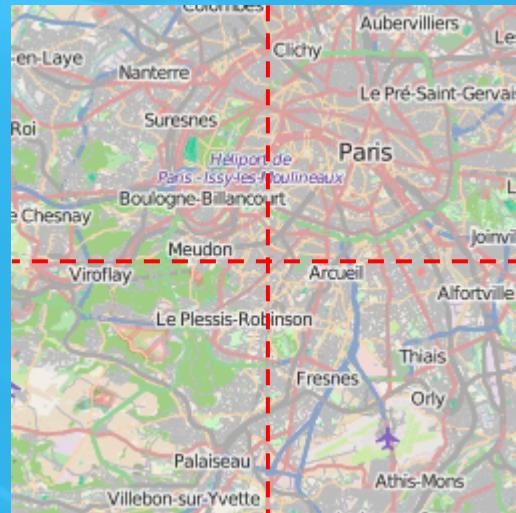
OpenStreetMap is a map of the world, created by people like you and free to use under an open license.

Learn More

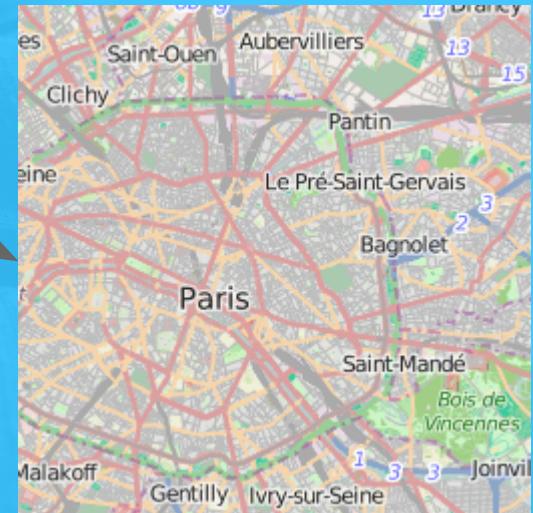
Start Mapping



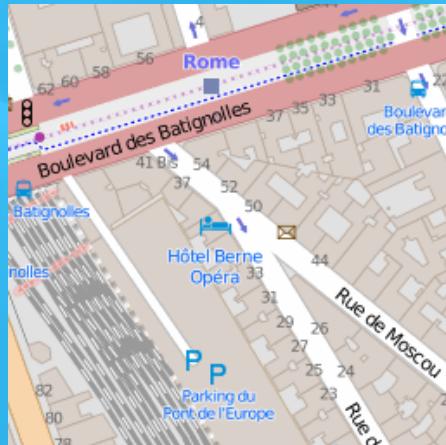
A map is a set of tiles



Zooming



What is a tile ?



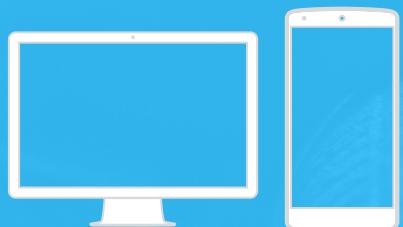
256 * 256 pixels

7 - 40 KB

For each tile:

- a zoom level (between 0 and 19)
- x and y coordinates

Tile provider



Your app



<http://a.tile.openstreetmap.org/13/4149/2817.png>

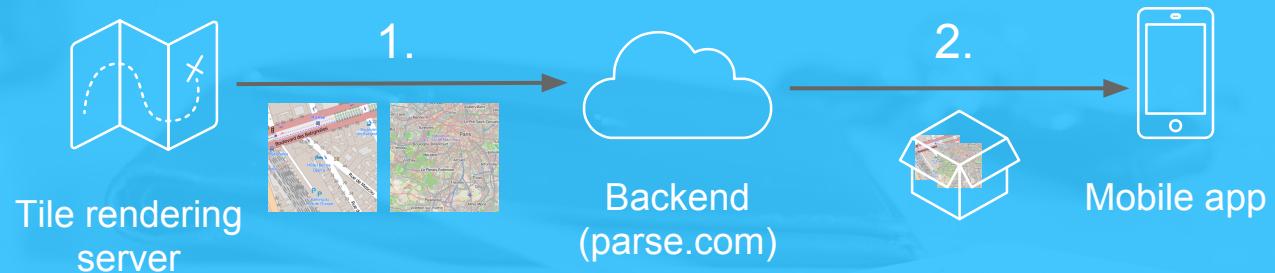


The tile provider



The strategy

1. In your backend, download all the tiles and create a package with them
2. In your app, import the package



2.
Get all the tiles !





Choose your tile rendering server



Be careful on the terms of the service !

- Google maps
- Here.com



- Open Street maps



Or set up your own server ! Ex: Mapnik

Choose the boundaries and the zoom level

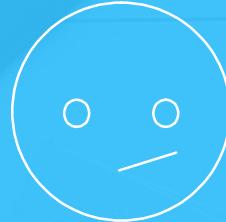
Example: Paris and its close suburbs from zoom 11

Zoom level	Number of tiles	Total size
16	2000	50 MB
17	7500	200 MB



Packaging the tiles

1. Convert the boundaries from lat/lon to tiles numbers
2. Loop to download the tiles
3. Create a package with the tiles

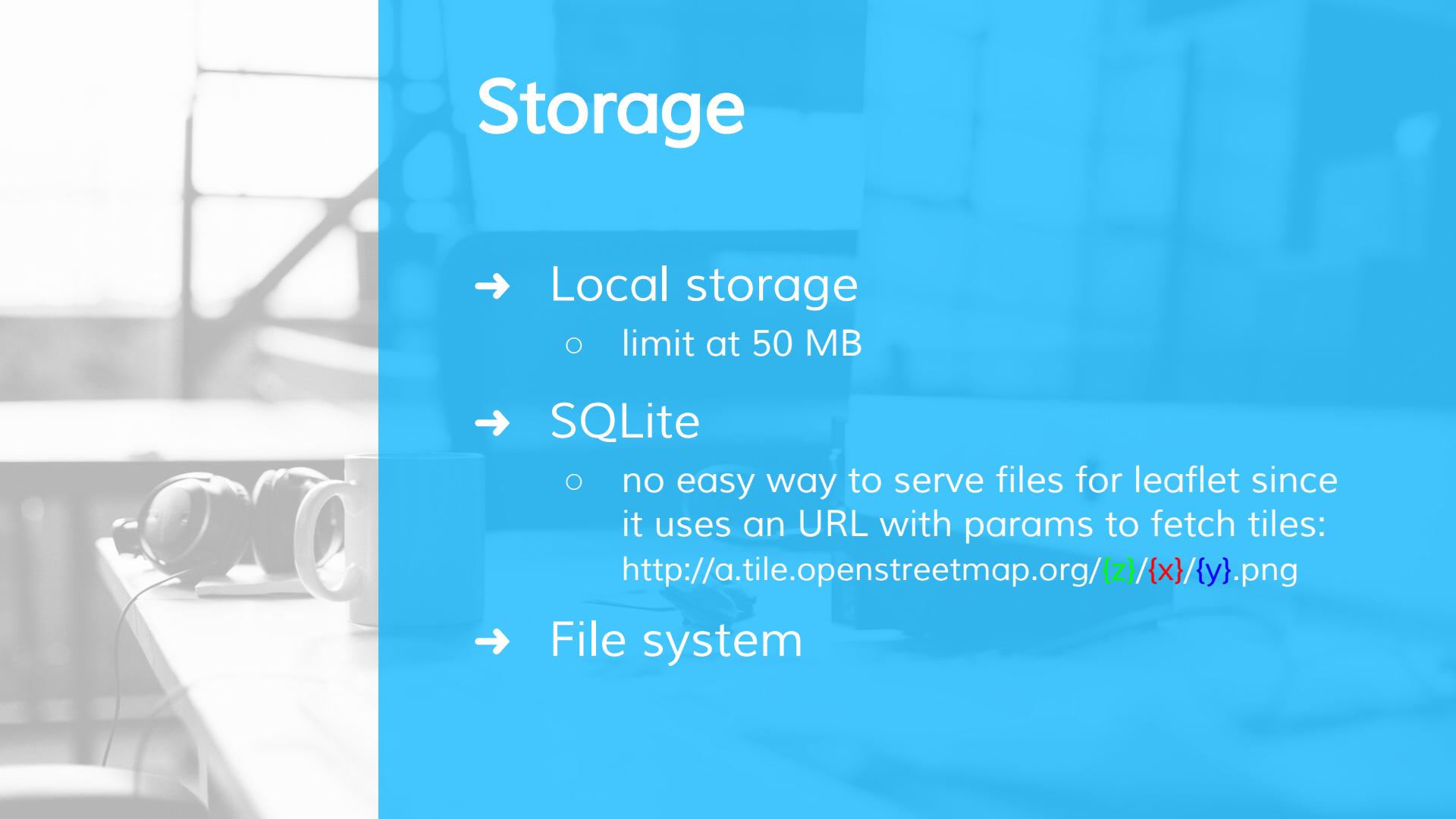


The number of requests
per minute exceeds the
limit



3.
**Importing the tiles
in your app**





Storage

- Local storage
 - limit at 50 MB
- SQLite
 - no easy way to serve files for leaflet since it uses an URL with params to fetch tiles:
`http://a.tile.openstreetmap.org/{z}/{x}/{y}.png`
- File system



Leaflet.js

Set the URL in leaflet for the tiles:

```
$scope.defaults = tileLayer: cordova.file.dataDirectory+'tile_{z}_{x}_{y}.png'
```

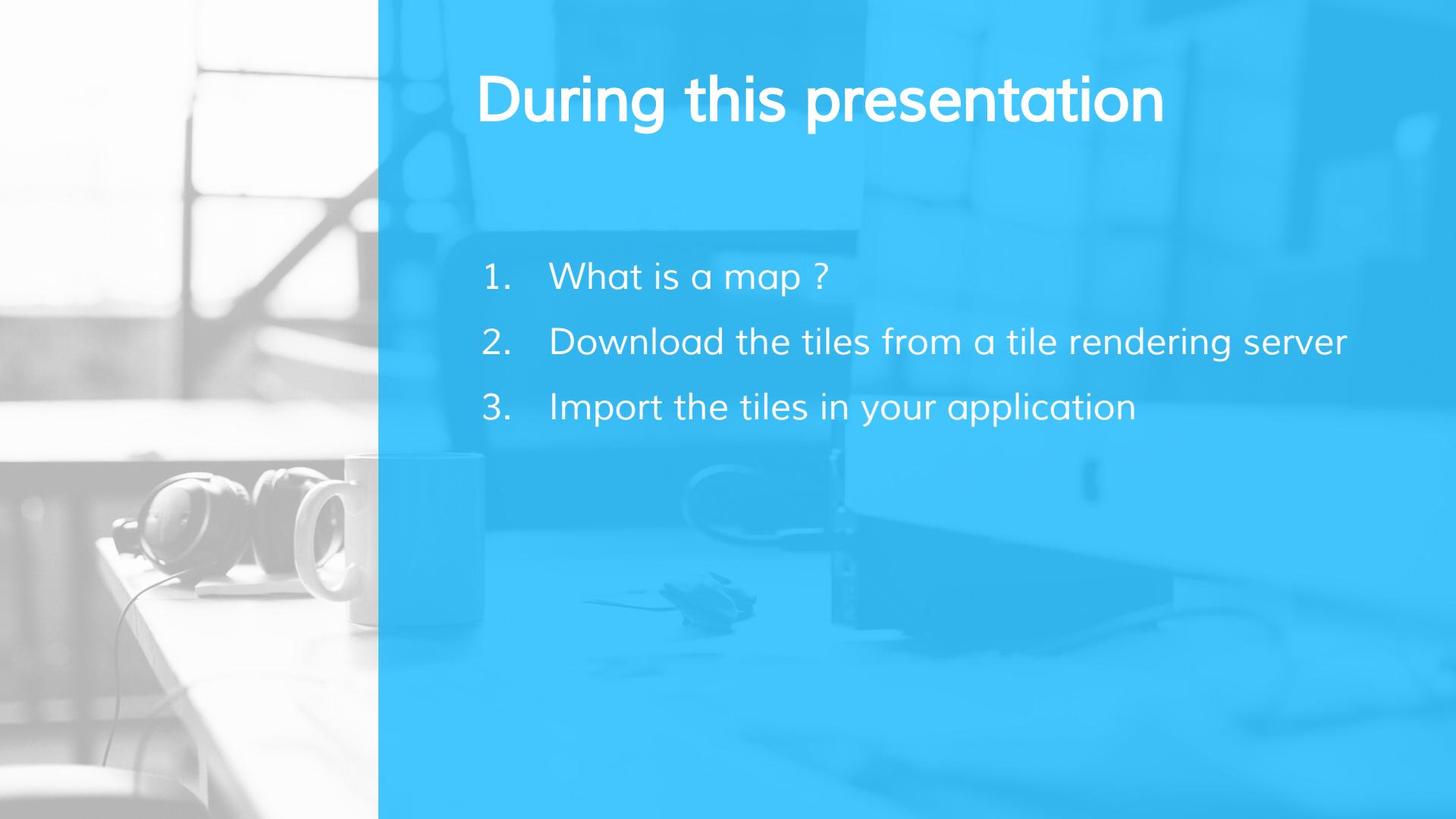
Set the min and max zoom levels and the boundaries



The memory on iOS
reached 500 MB when
downloading a package
-> crash

Write a native plugin

1. Write plugin.xml
2. Write the native code
3. Call the method with cordova.exec



During this presentation

1. What is a map ?
2. Download the tiles from a tile rendering server
3. Import the tiles in your application

Thanks!

Any questions?

You can find me at:
@benjmichel

<http://blog.bamlab.fr/how-to-build-an-offline-map-system-for-an-hybrid-app/>





CREDITS

Special thanks to all the people who made and released these awesome resources for free:

- Presentation template by [SlidesCarnival](#)
- Photographs by [Death to the Stock Photo](#)
[\(license\)](#)