

# Mapv和node-canvas 在地图可视化上的一些实践

倪楷

# 关于我

- 2011-2012.05 新浪网UED
- 2012.5-至今 百度地图开放平台  
位置地理大数据



倪楷  
<http://nikai.us>

# 百度慧眼



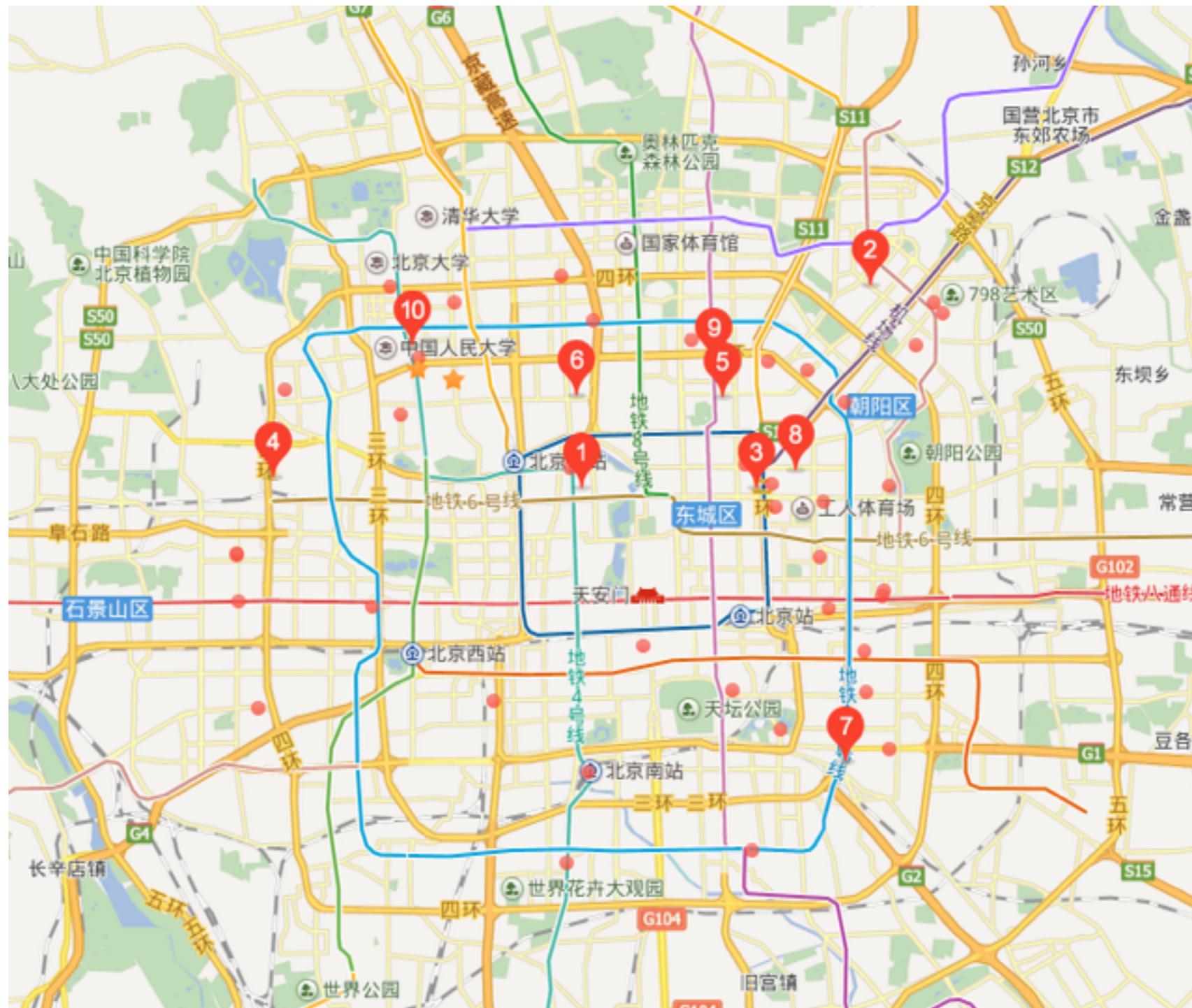
<http://huiyan.baidu.com>

# 提纲

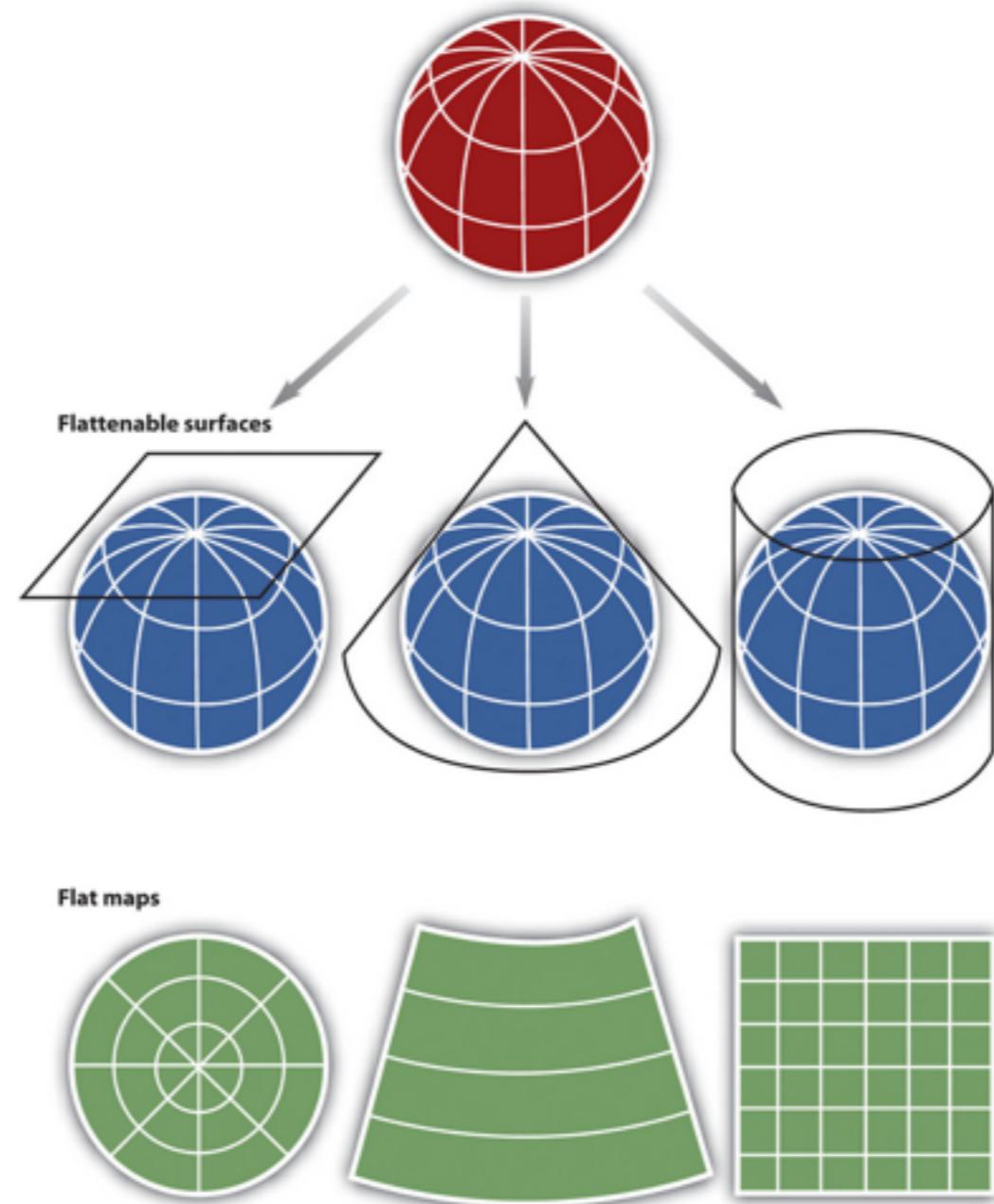
- webgis相关知识
- mapv可视化开源库
- node-canvas的应用

# webgis相关知识

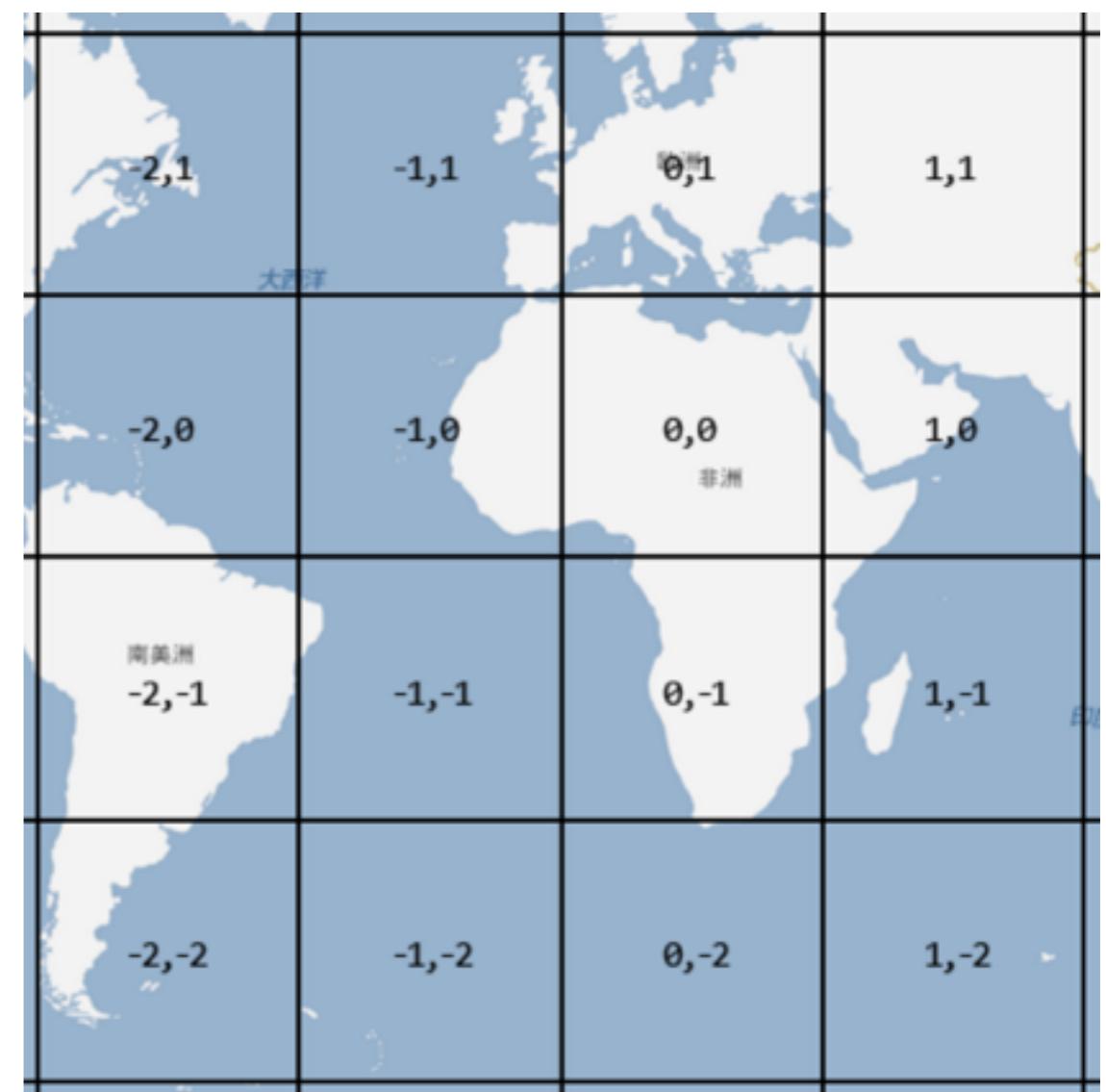
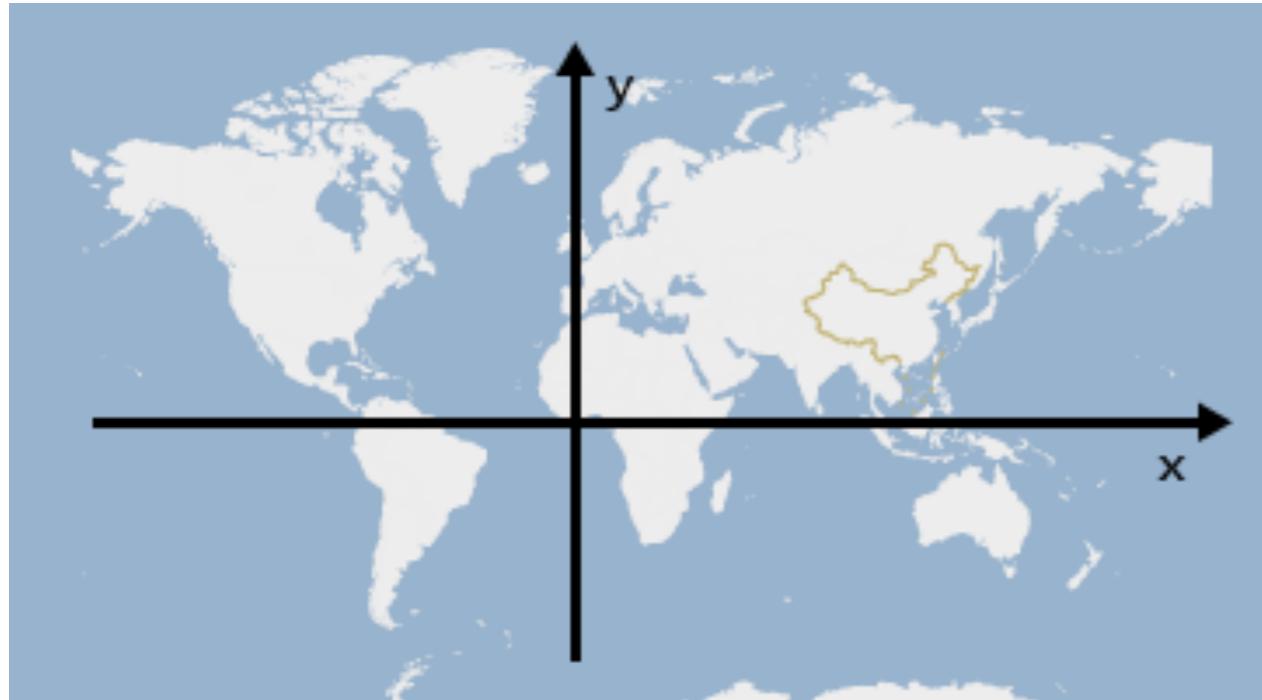
# 百度地图Javascript api



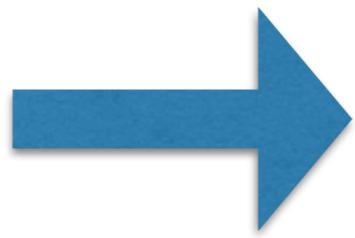
# 投影



# 平面坐标、瓦片划分

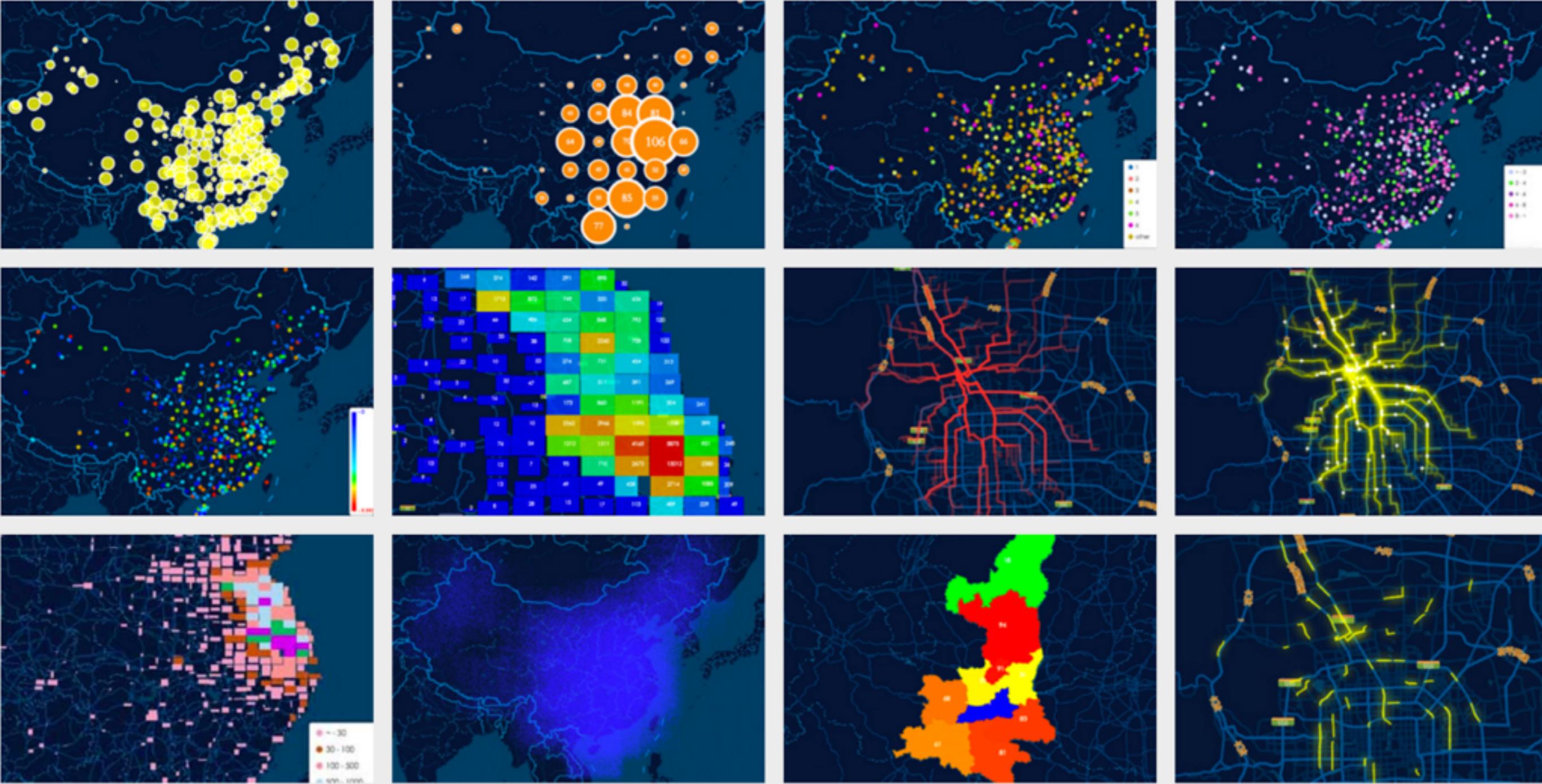


# 瓦片生成规则



18级瓦片个数？

`Math.pow(4,18) = 687,1947,6736`



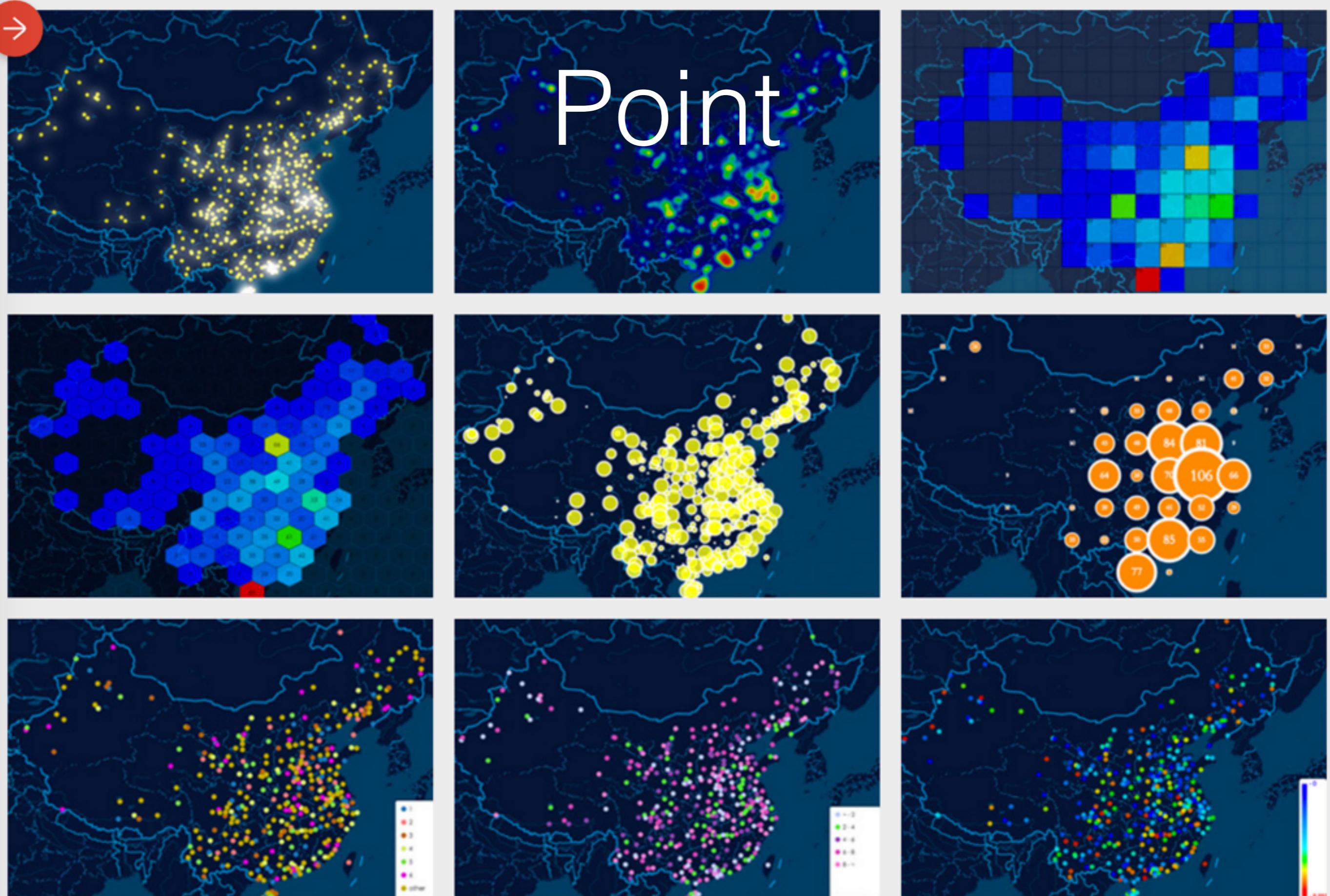
# MapV可视化开源库

<http://mapv.baidu.com>

# 应用场景

在地图上展示位置大数据

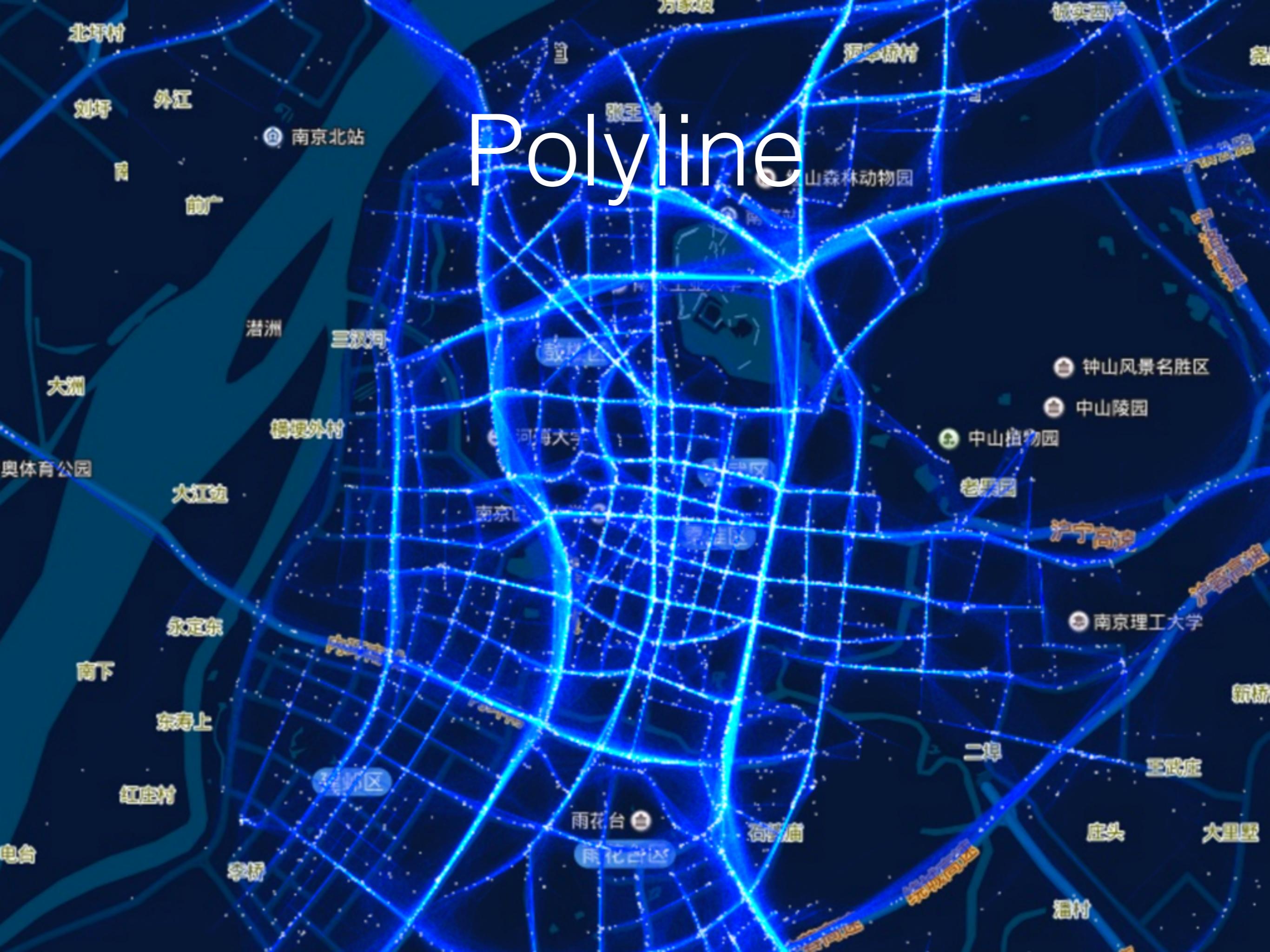
- 点，定位点、poi点等
- 线，轨迹
- 面，小区、商圈、楼面等



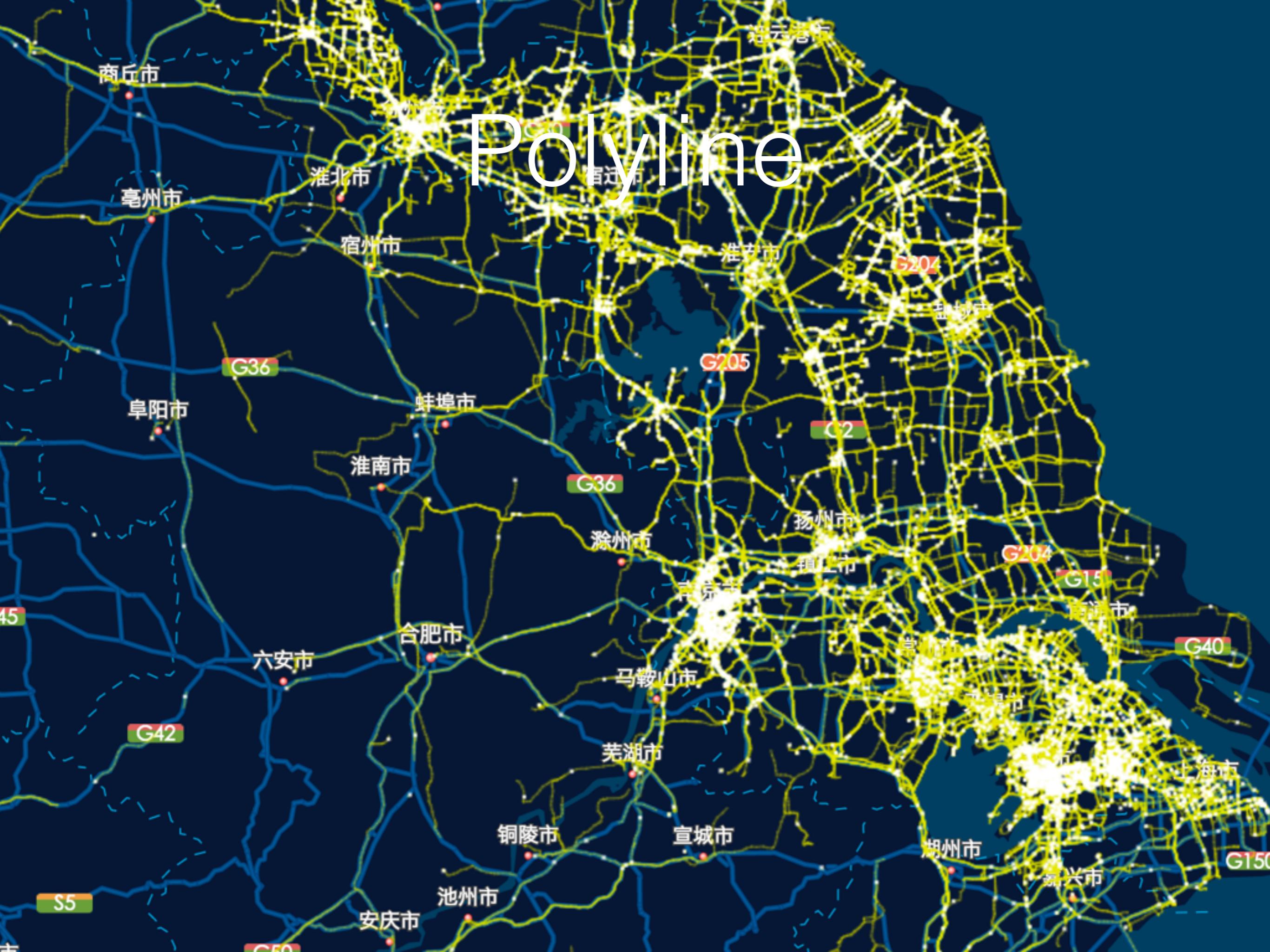


Point

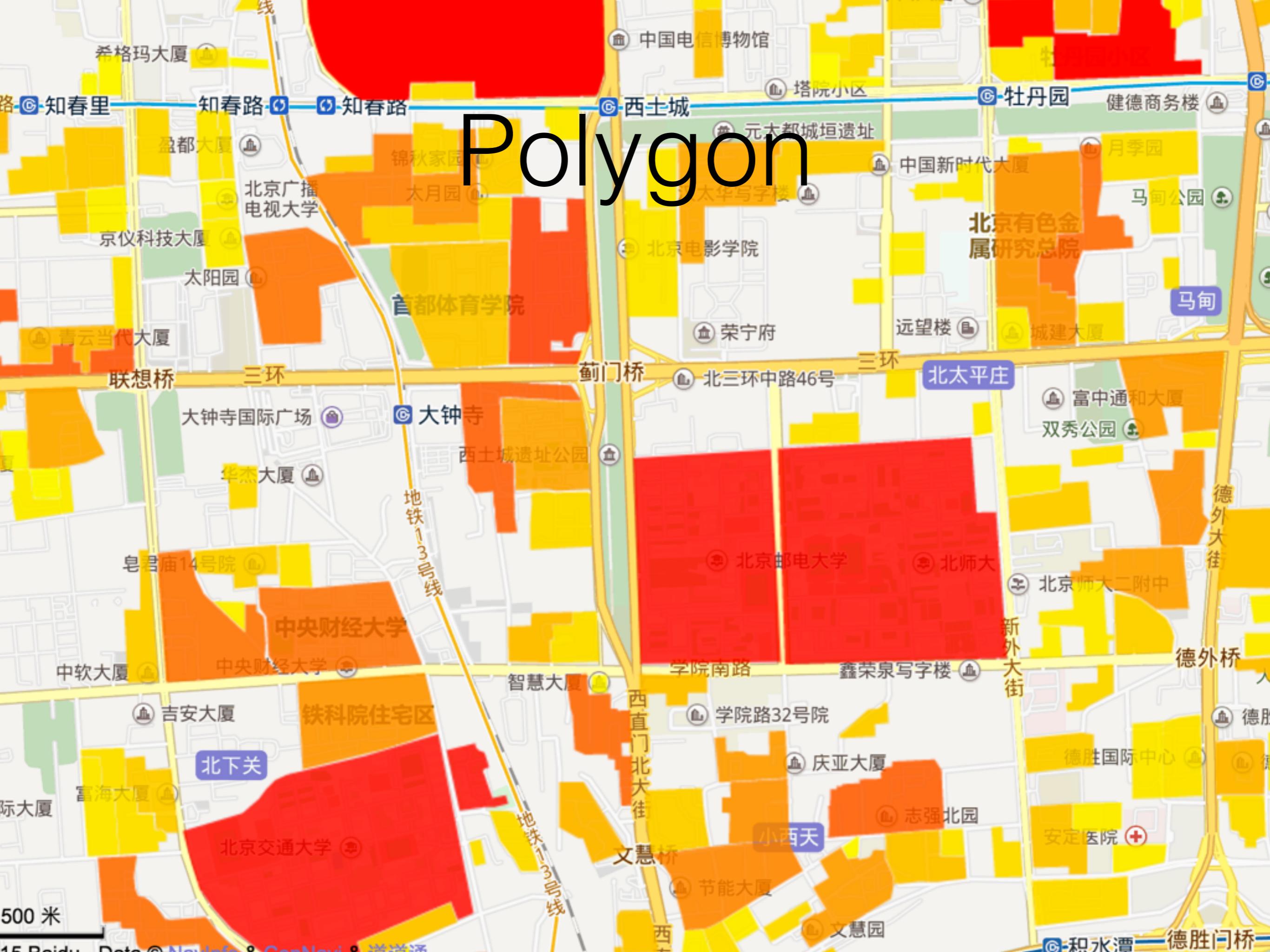
# Polyline



# Polyline

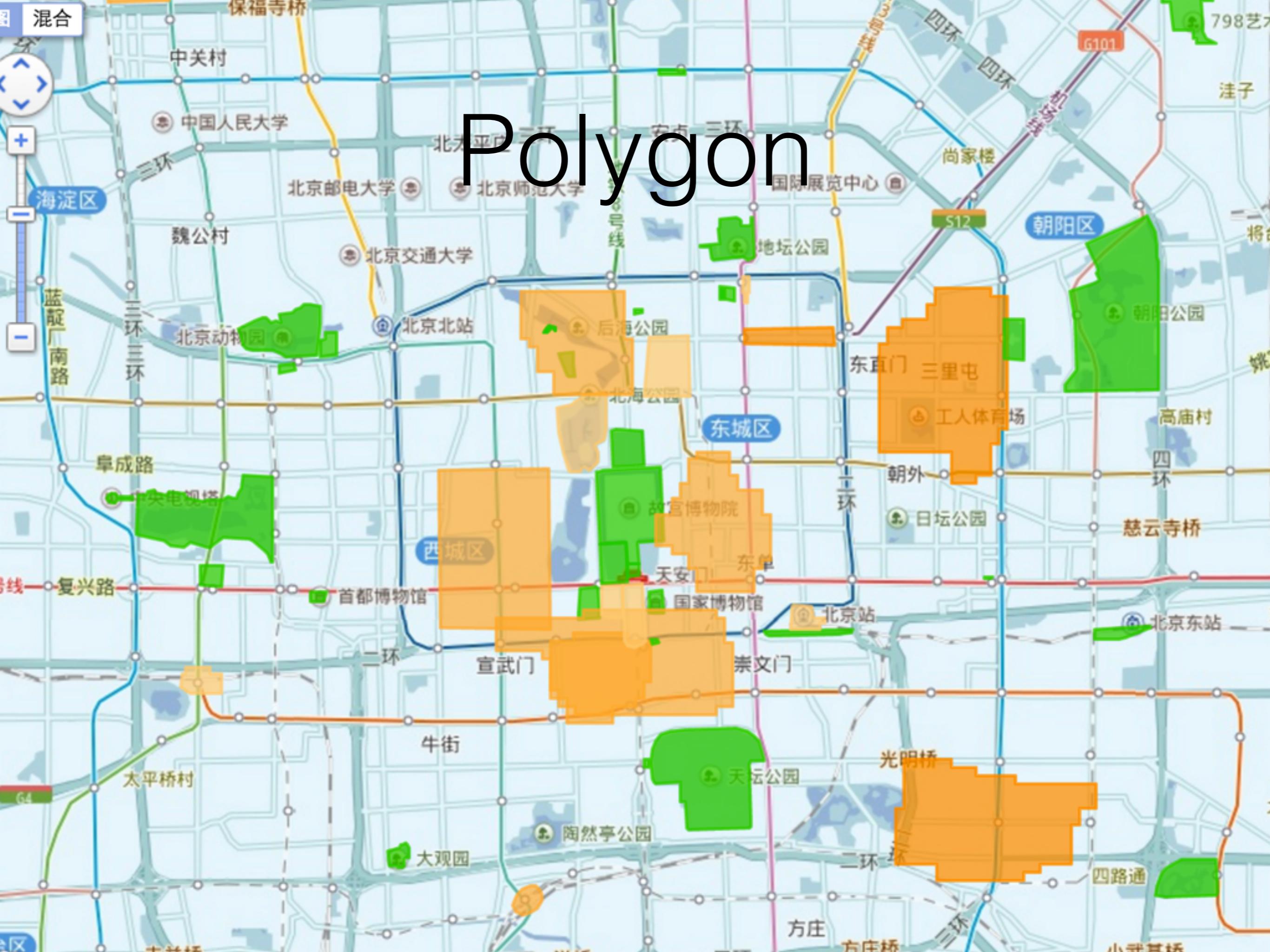


# Polygon



500米

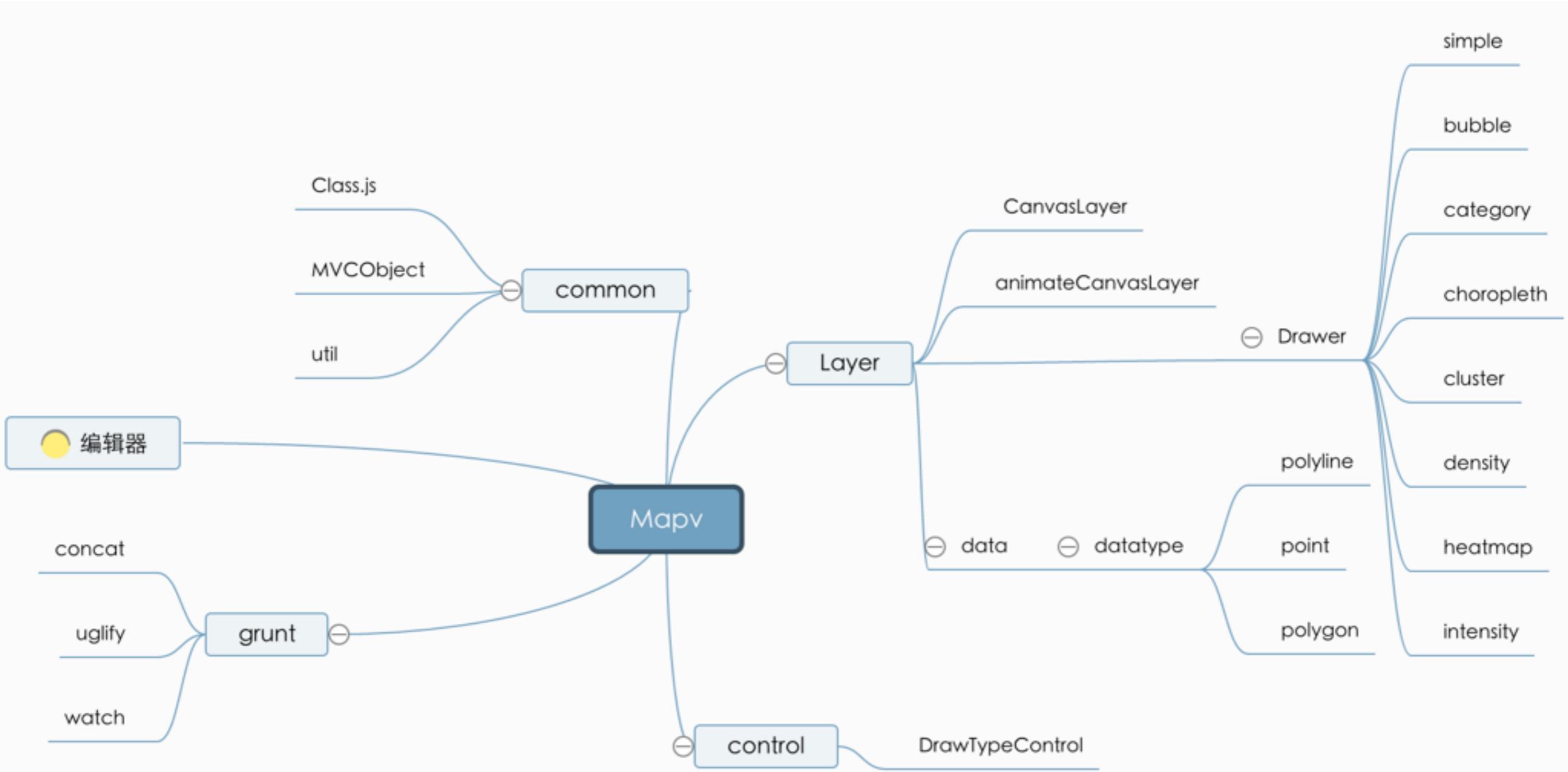
# Polygon



# 简单示例

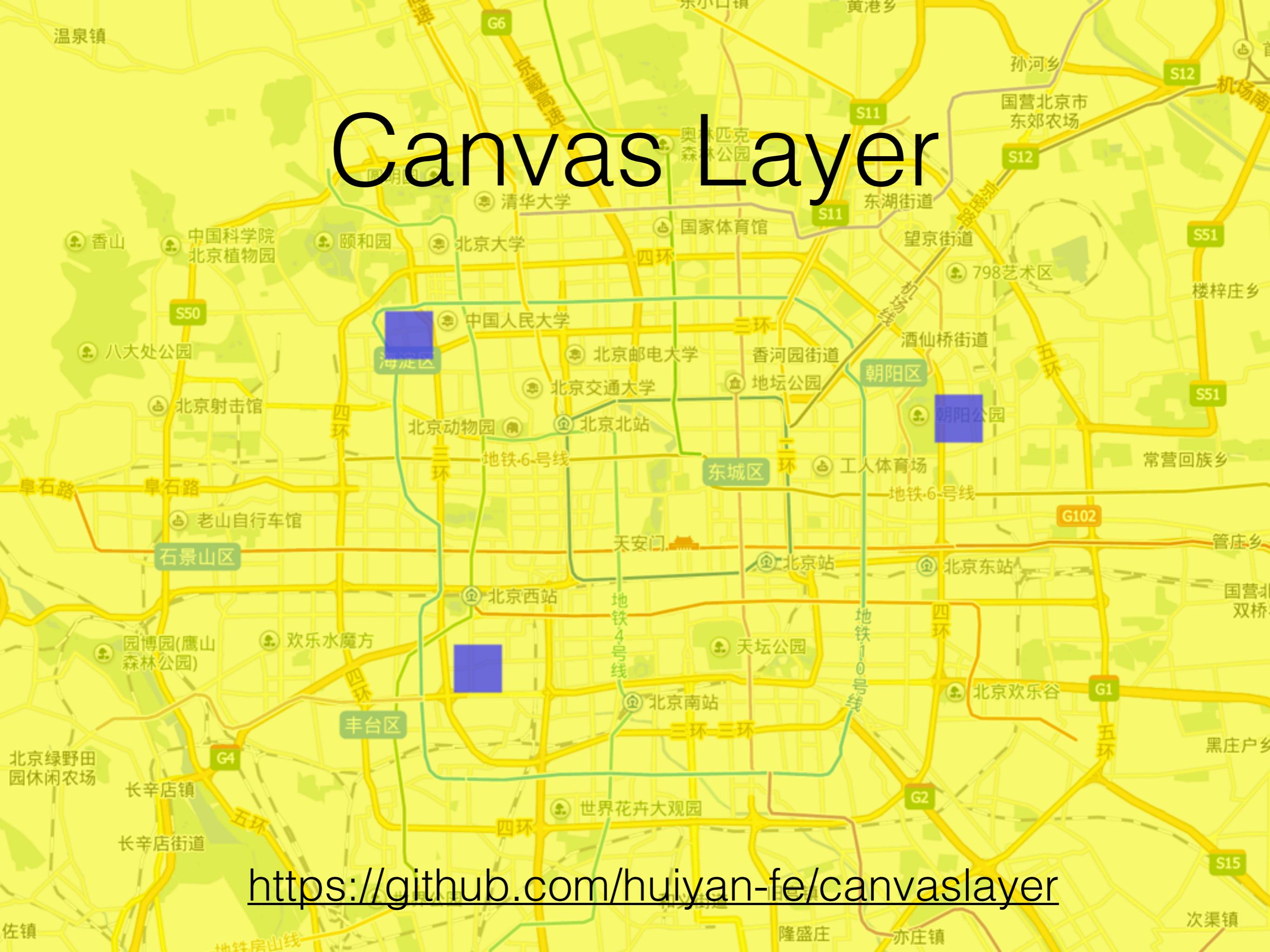
```
1 <script type="text/javascript">
2
3 // 第一步创建mapv示例
4 var mapv = new Mapv({
5     map: bmap // 百度地图的map实例
6 });
7
8 var data = [
9     {lng: 123, lat: 23, count: 10},
10    {lng: 124, lat: 25, count: 15}
11 ]; // 数据
12
13 var layer = new Mapv.Layer({
14     mapv: mapv, // 对应的mapv实例
15     dataType: 'point', // 数据类型，点类型
16     data: data, // 数据
17     drawType: 'simple', // 展示形式
18     drawOptions: { // 绘制参数
19         fillStyle: 'rgba(200, 200, 50, 1)', // 填充颜色
20         size: 4 // 半径
21     }
22 });
23
24 </script>
```

# 代码结构



canvas 2d and webgl

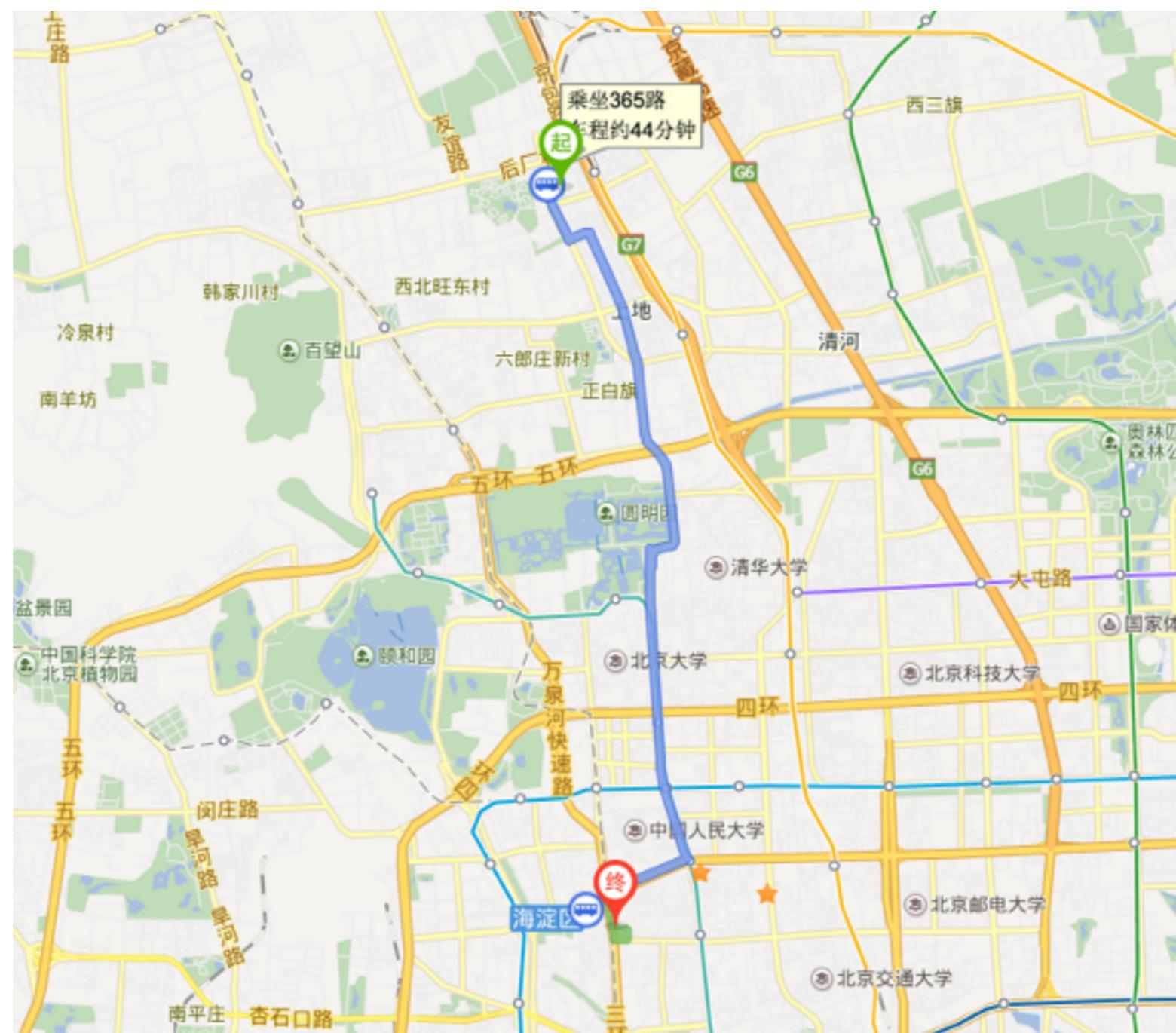
# Canvas Layer



<https://github.com/huiyan-fe/canvaslayer>

why canvas?

# 传统地图绘制



# 覆盖物绘制方法

- div(marker)
- svg、 canvas、 vml(polyline、 polygon)

# canvas性能更好

## 优势

- 大数据量
- 动画
- 操作像素

## 缺点

- 兼容性
- 事件

# 操作像素



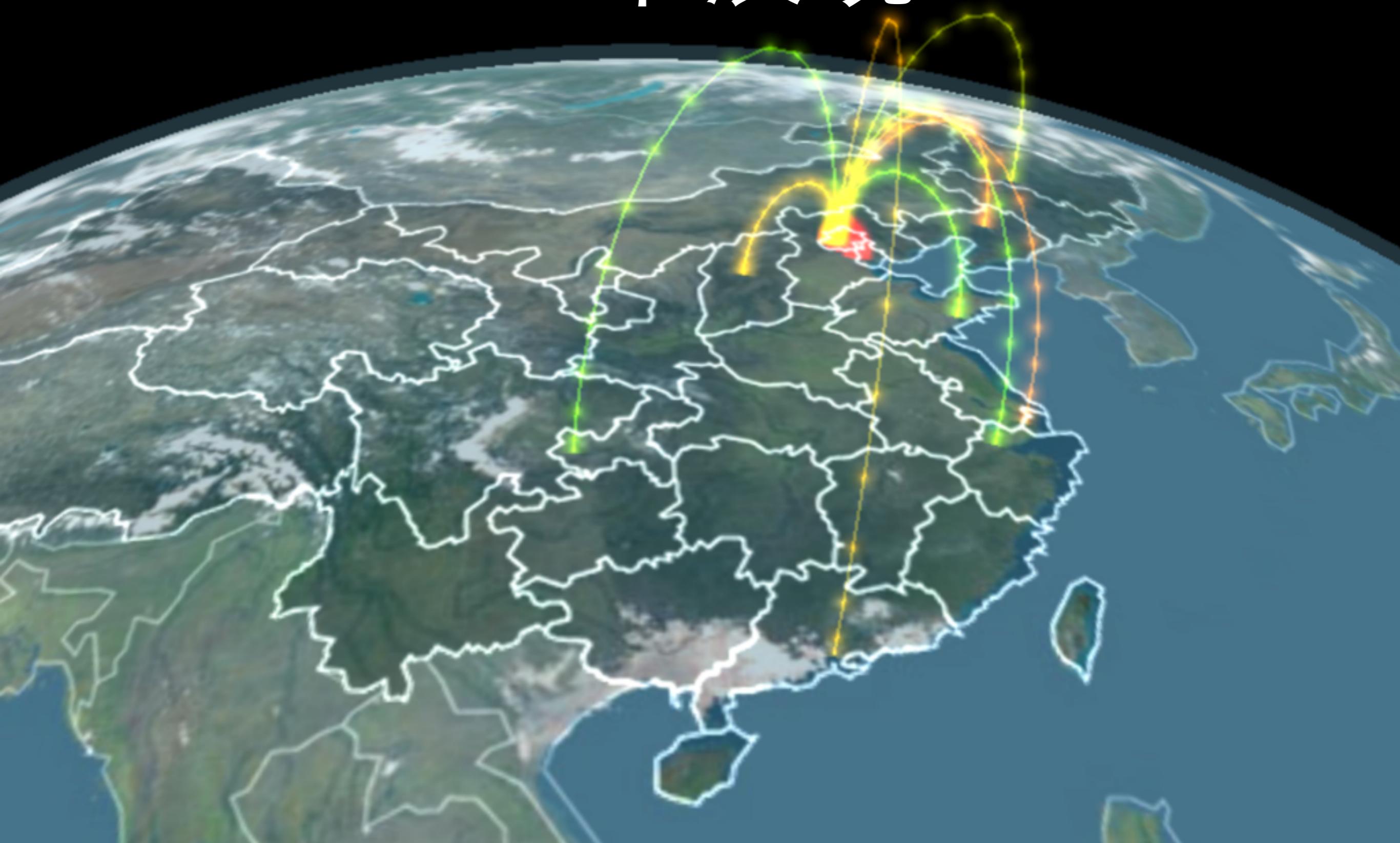
# 动画效果



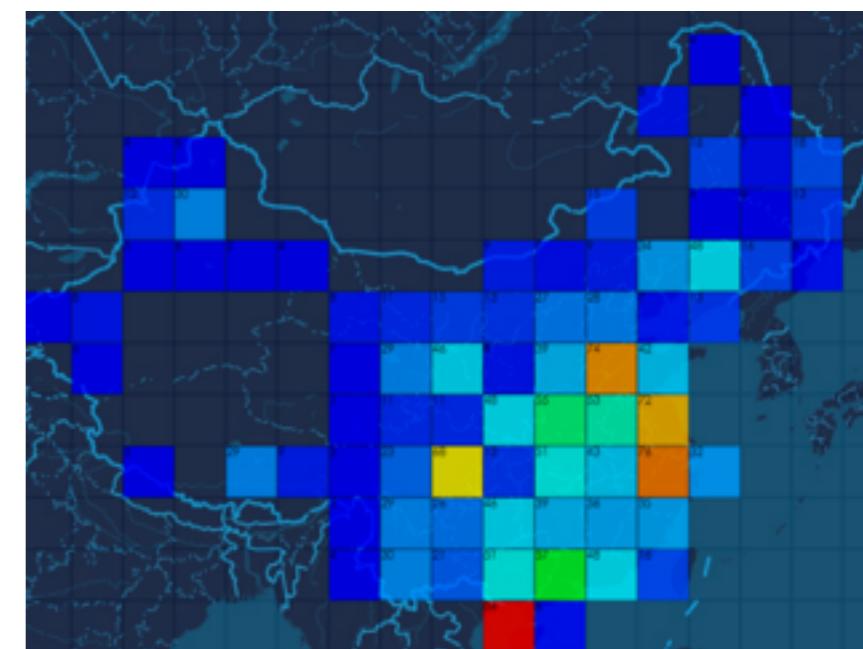
why webgl?

性能更佳、硬件加速

# 三维展现



# 一些实时计算



点聚合

# node-canvas的应用

Canvas graphics API backed by Cairo

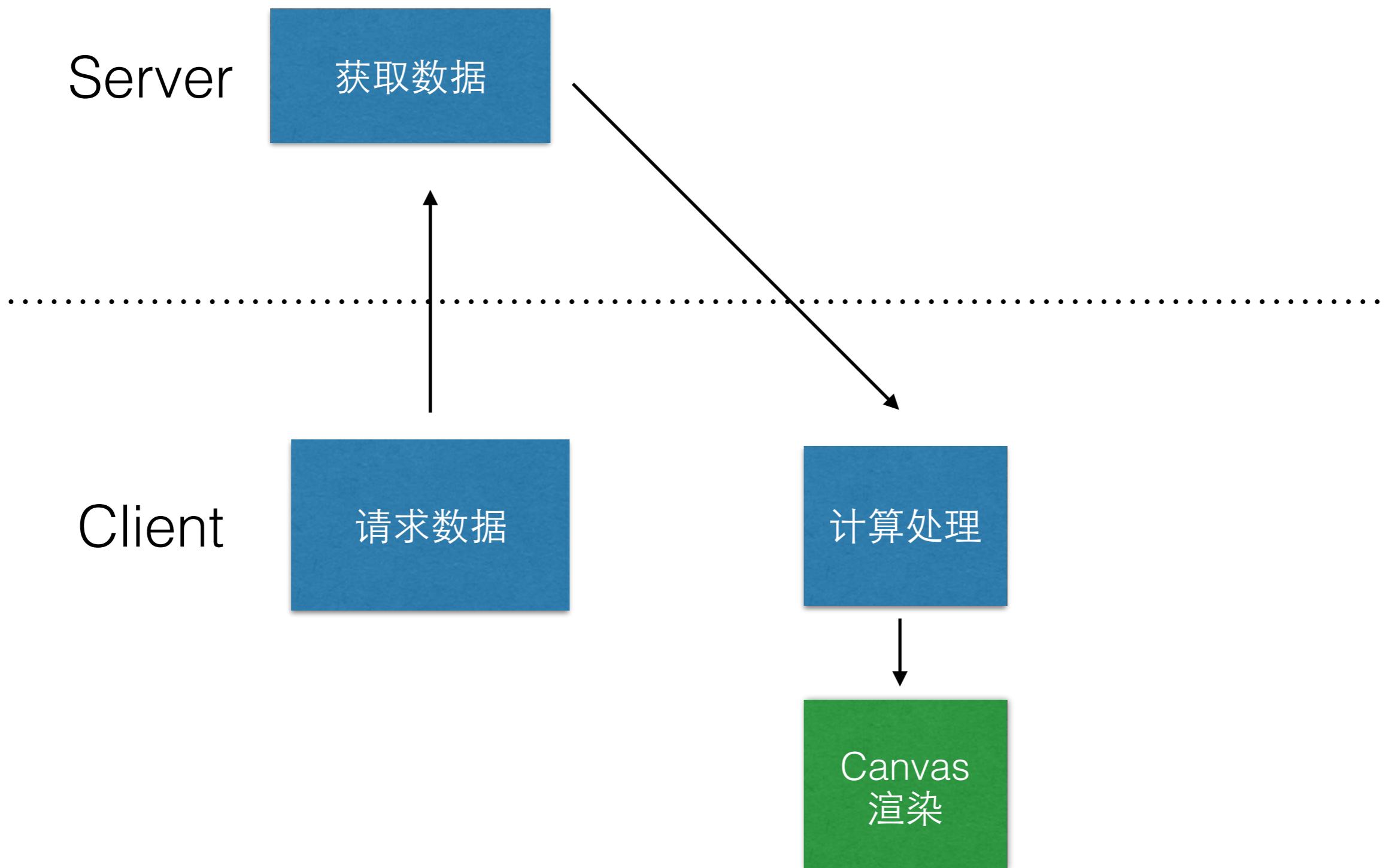
# 个性化底图



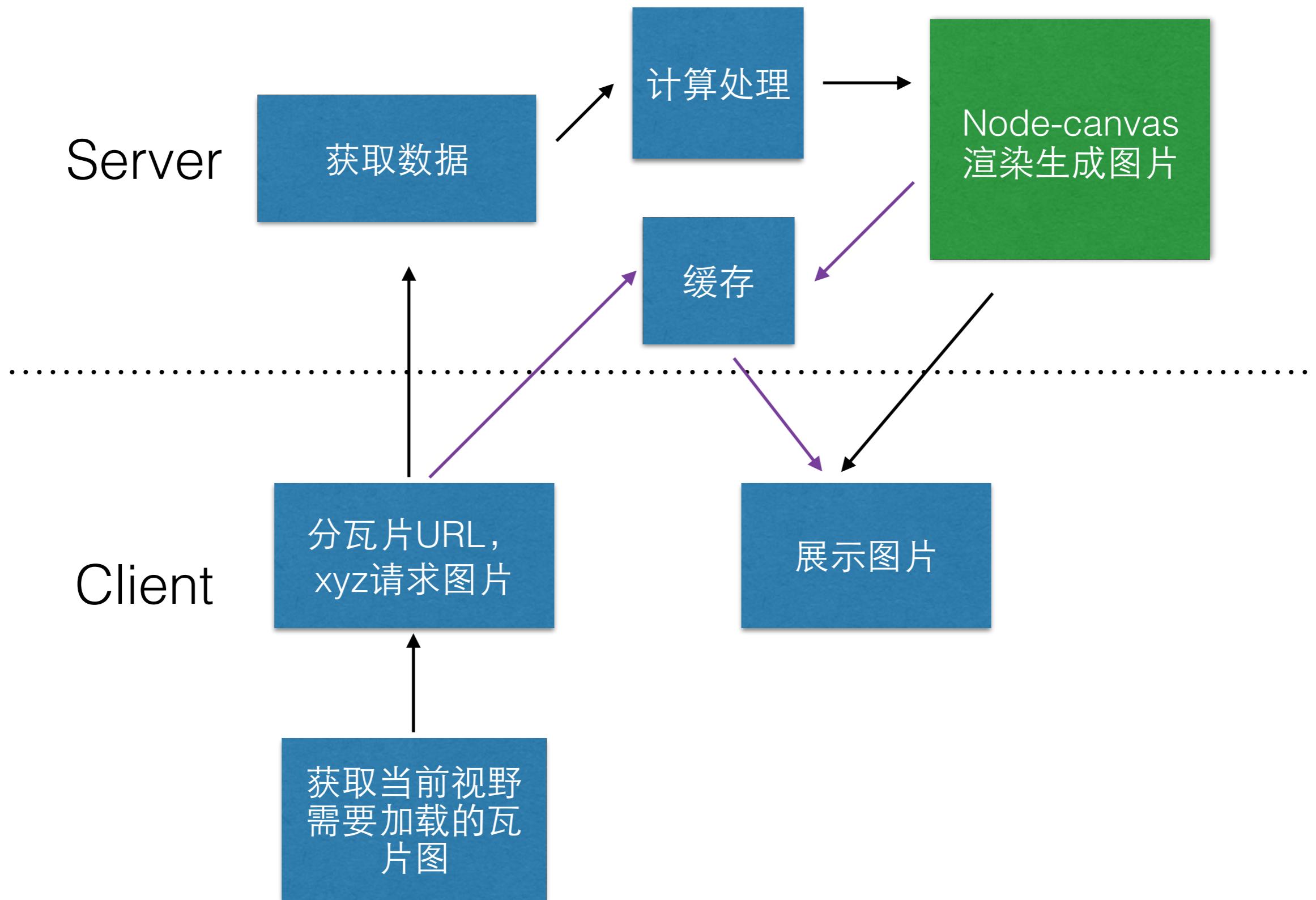
# 使用node-canvas生成个性化 化底图

- 解决浏览器兼容问题
- 一份代码，前后端都可使用
- 浏览器没有渲染压力

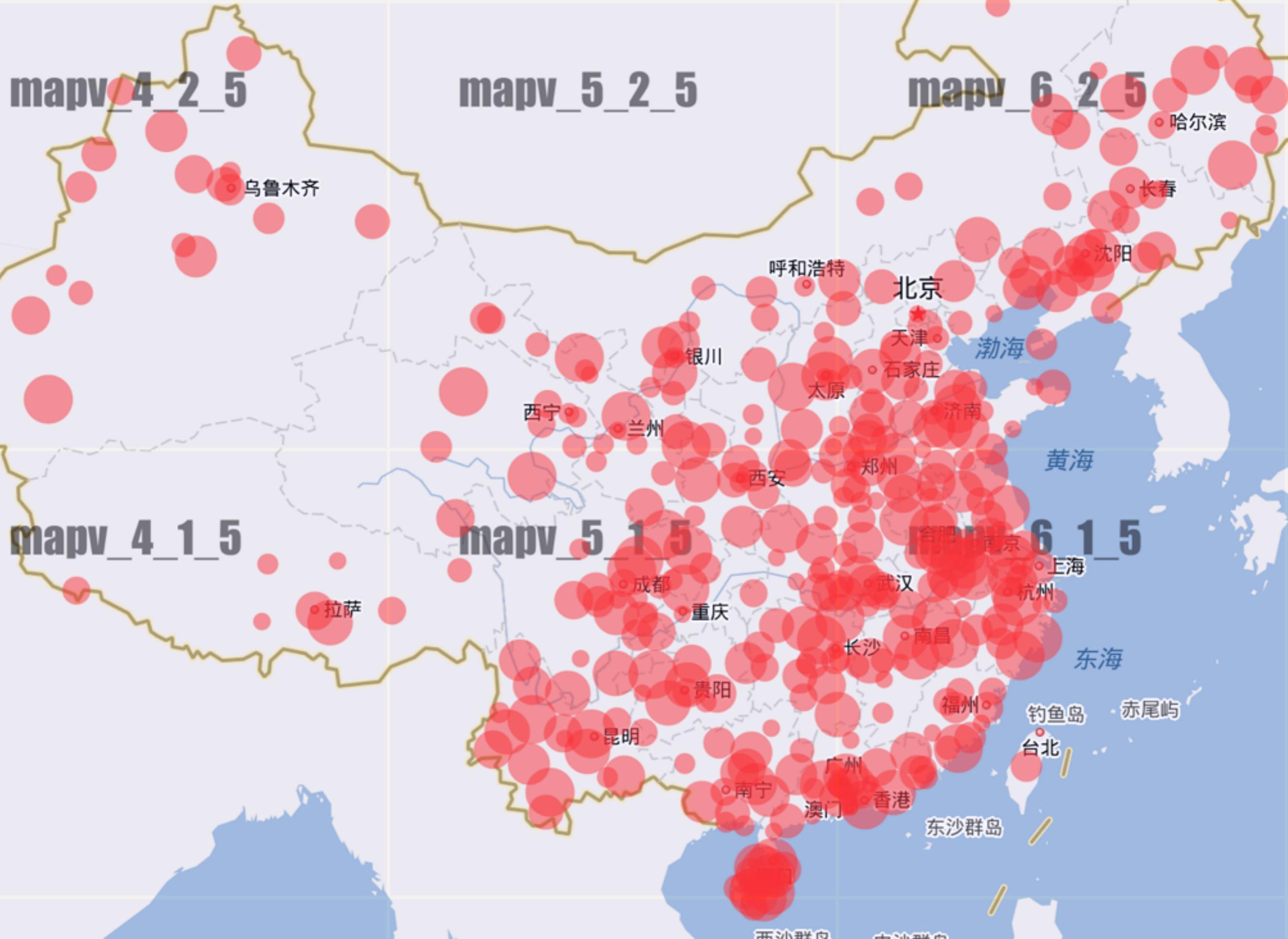
# Canvas In Client



# Canvas In Server

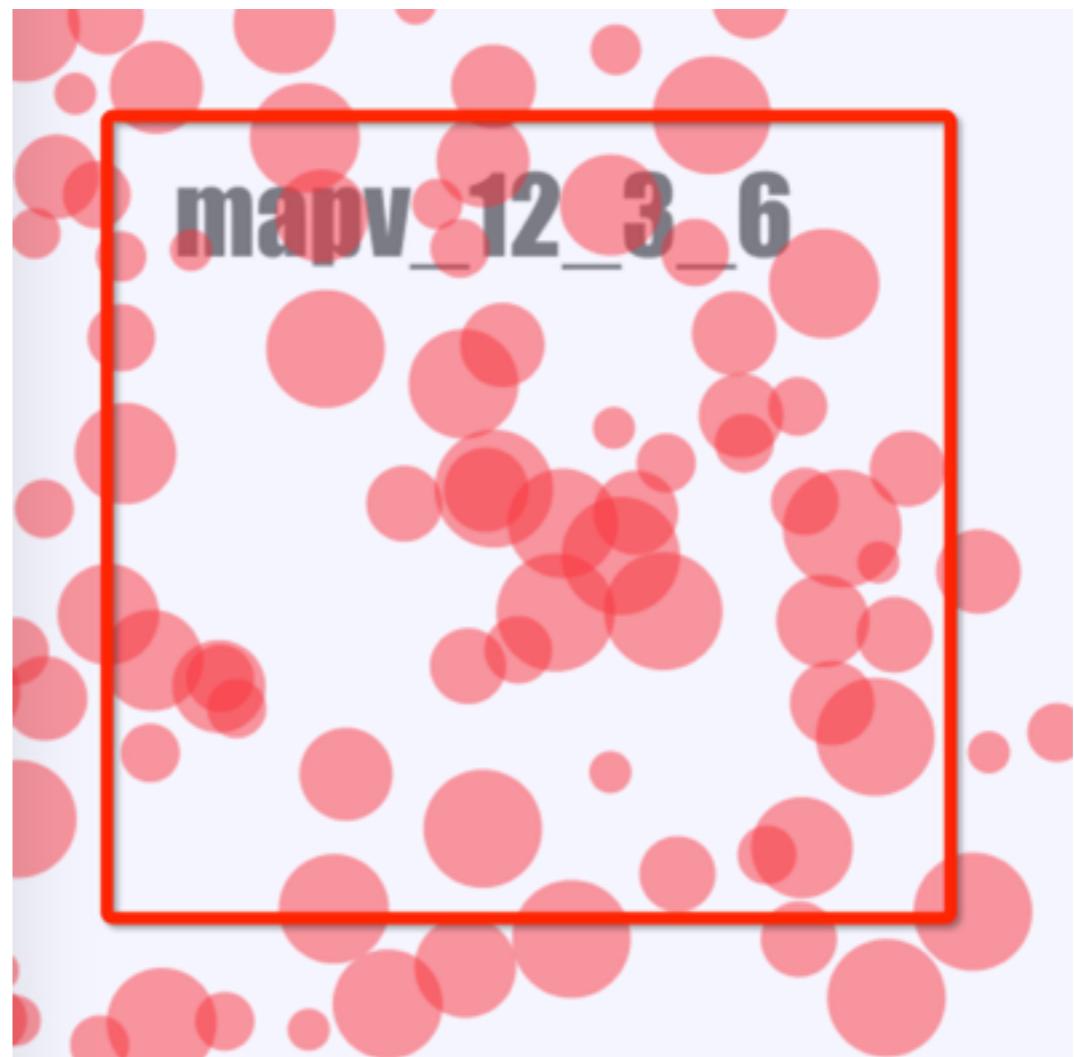


node-canvas可视化展示

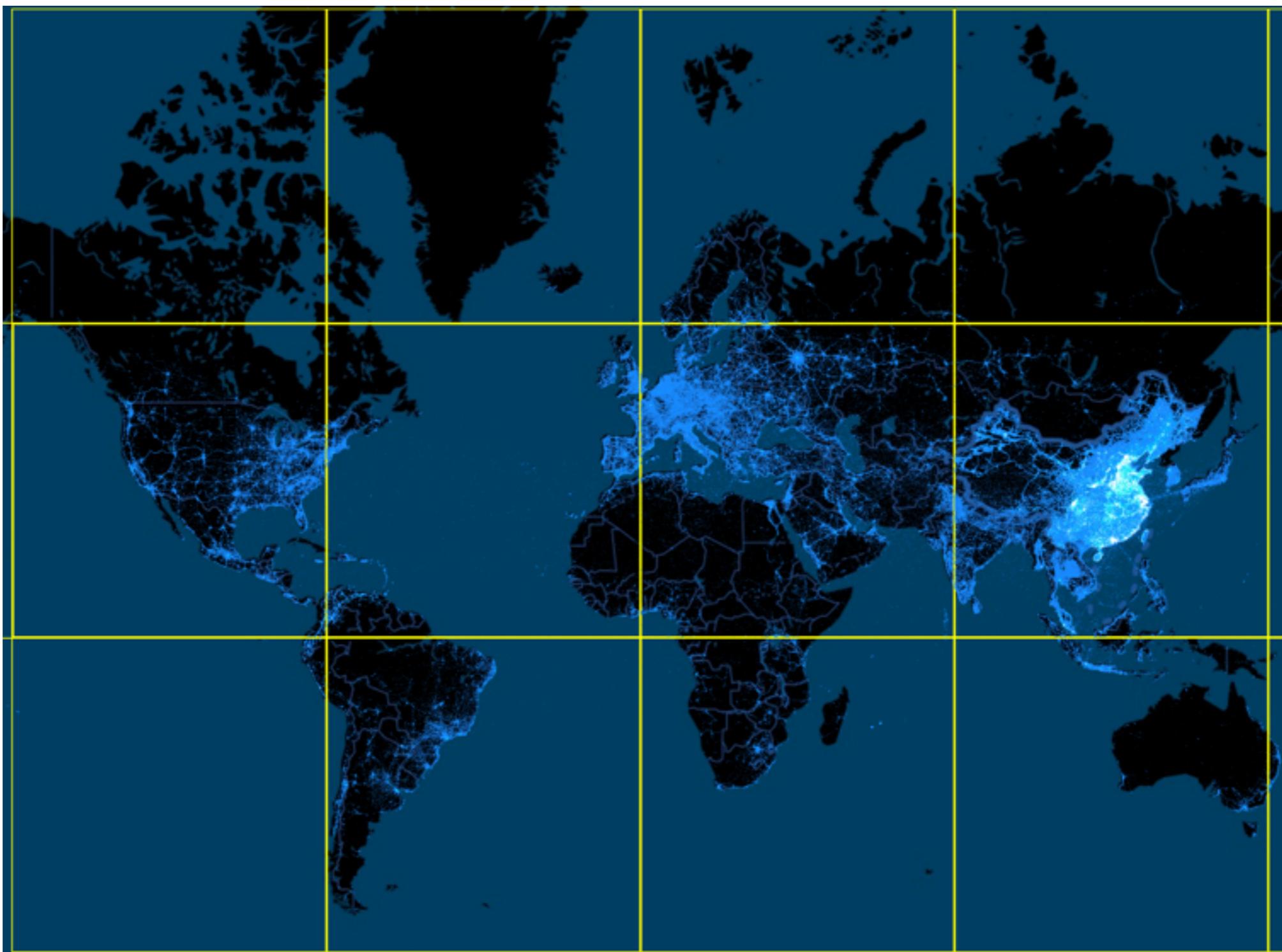


# 单个瓦片绘制

扩大区域绘制  
解决跨瓦片的点截断问题



# 大数据量的定位请求



# 瓦片优点

- 大数据量时候前端展示性能较好
- 兼容性好

# 瓦片的缺点

- 展示形式不够灵活
- 不能做动画效果

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