

# BIG IoT Open Call 2

## final report - Flowhub



Jon Nordby, 07 November, 2018

# Extension goal

Make it simple to  
build **web** applications  
based on BIG IoT offerings

# Extention objectives

- 1) Enable using JavaScript in browser
- 2) Enable visual programming using Flowhub+NoFlo
- 3) Demo app: “Park My Car”

# “Park My Car” app

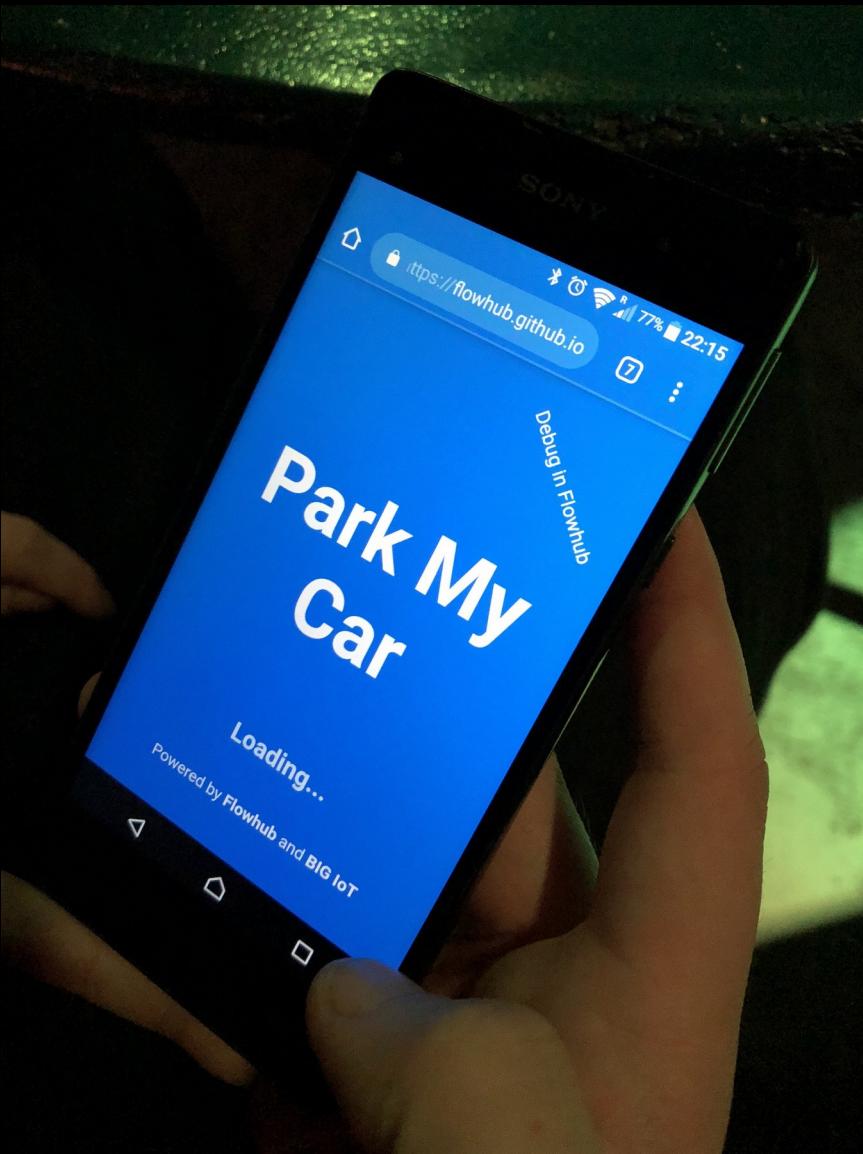
# Scenario

You are driving in a unfamiliar city,  
looking for an available parking spot.

**Spaces  
Available**

**FULL**

**ParkMyCar.app**



Go to website URL

Zero install

Debug in Flowhub



flowhub.github.io wants to use your device's location

BLOCK

ALLOW

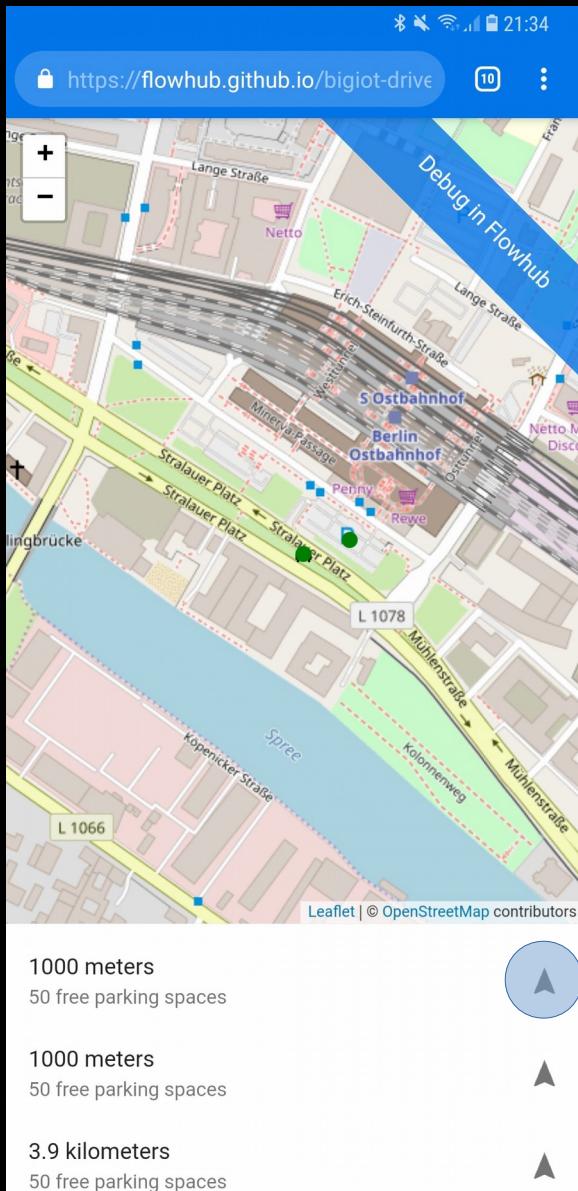
Loading...

# Allow to use Location



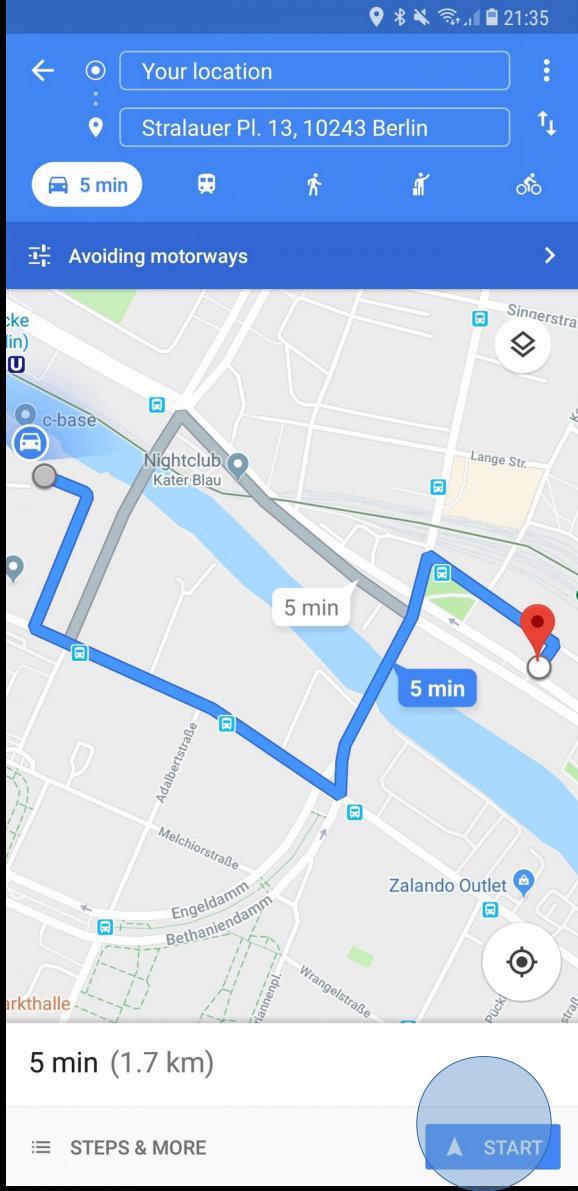
# See closest available parking

## Click to preview



See location of the parking

Hit to navigate there

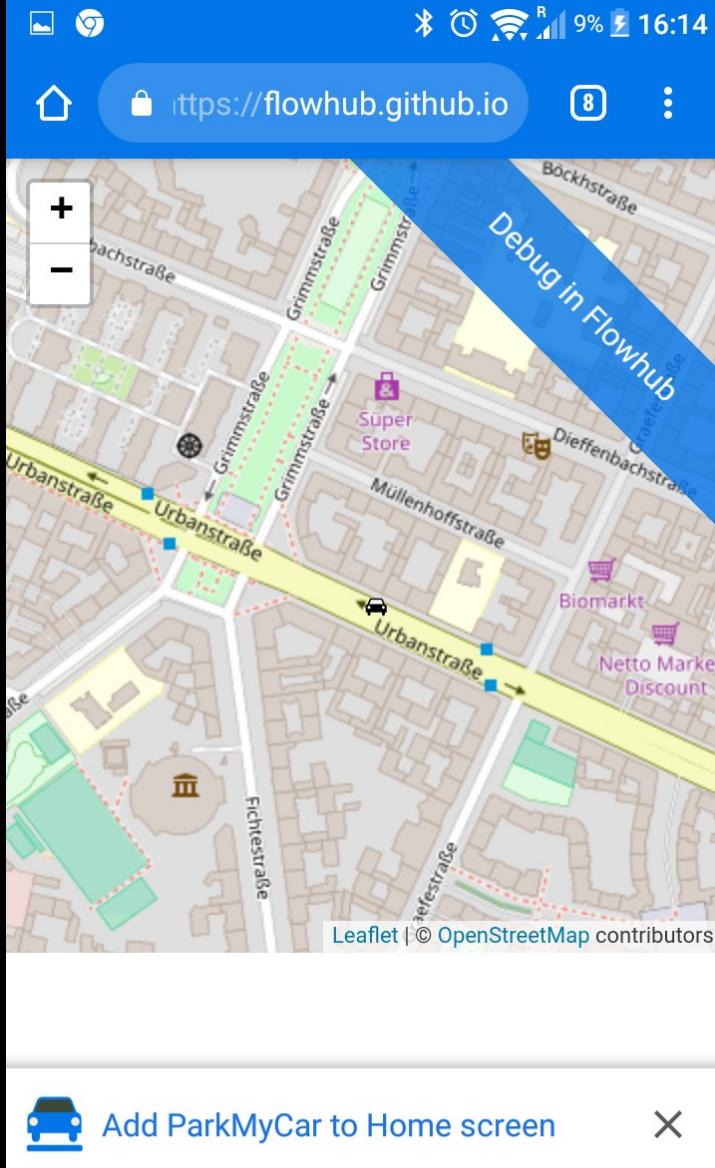


Show directions  
using Google Maps

Native app on Android,iOS  
else webapp



Success: Car parked!



Automatic prompt to  
install to device

After using the webapp  
couple of times

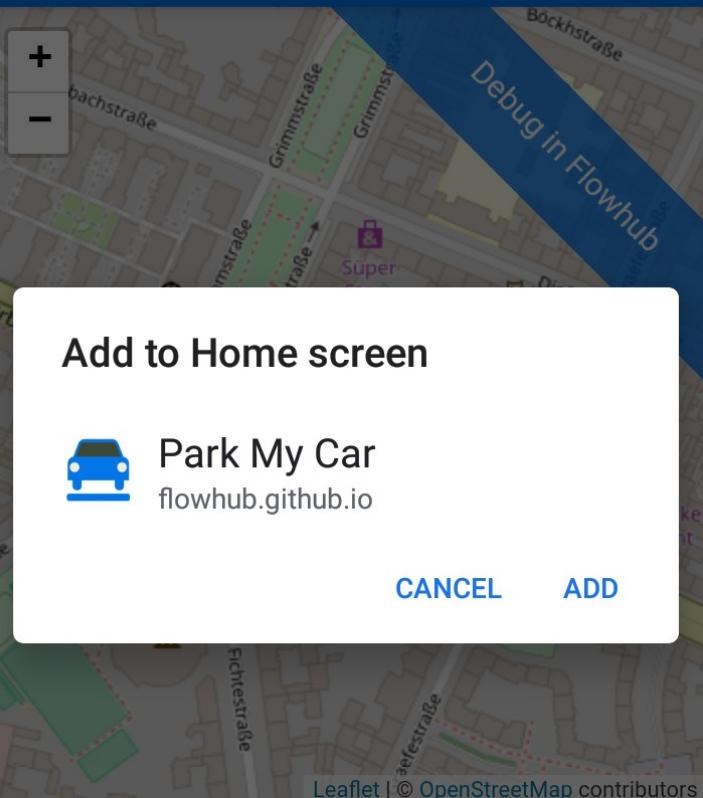


9% 16:06



https://flowhub.github.io

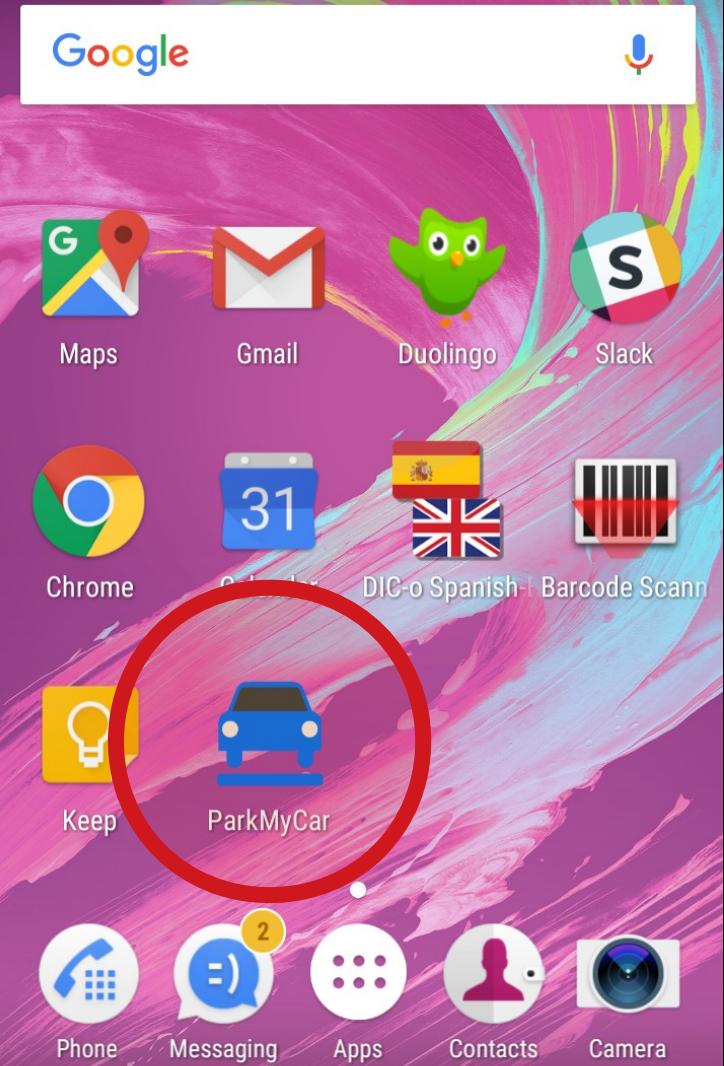
8



2.3 kilometers

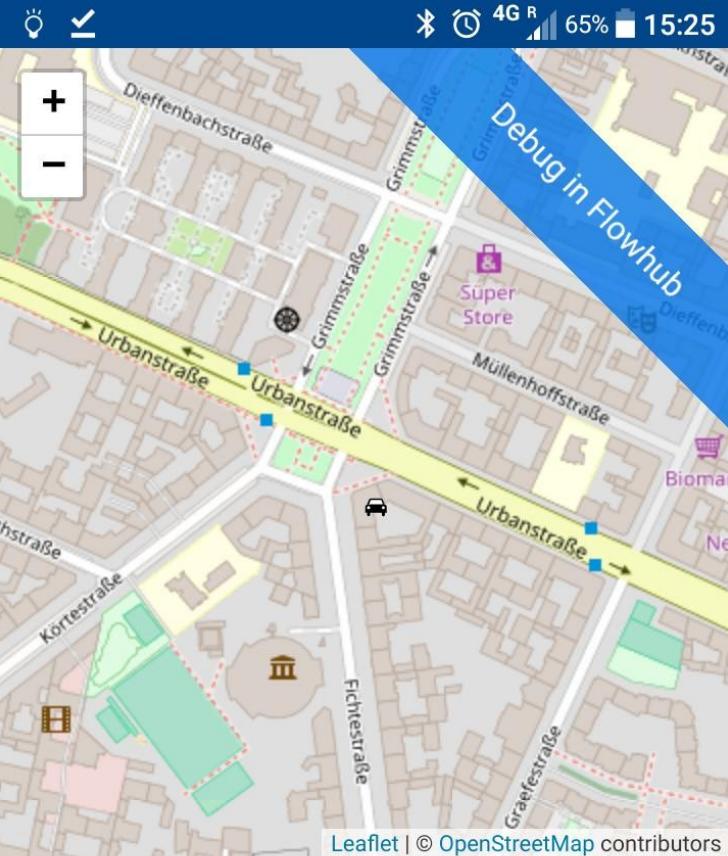
30 free parking spaces

2.4 kilometers



Can be launched from  
Home Screen

Faster startup,  
loads from offline cache



2.4 kilometers

30 free parking spaces



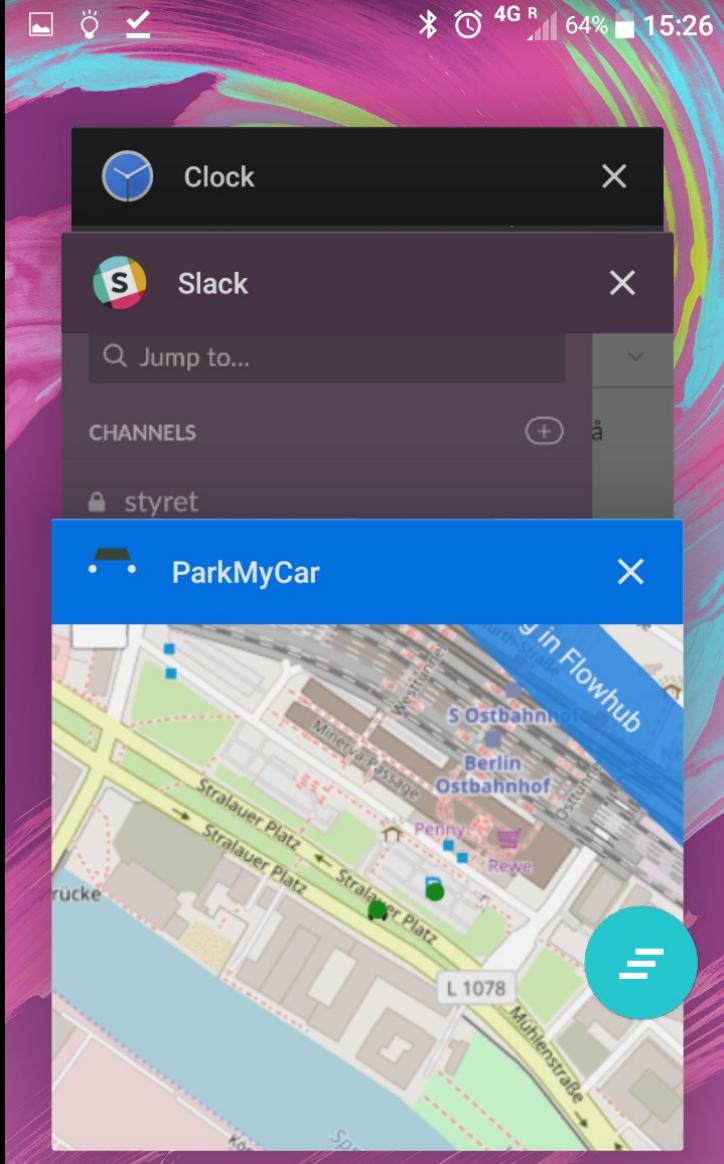
2.4 kilometers

20 free parking spaces

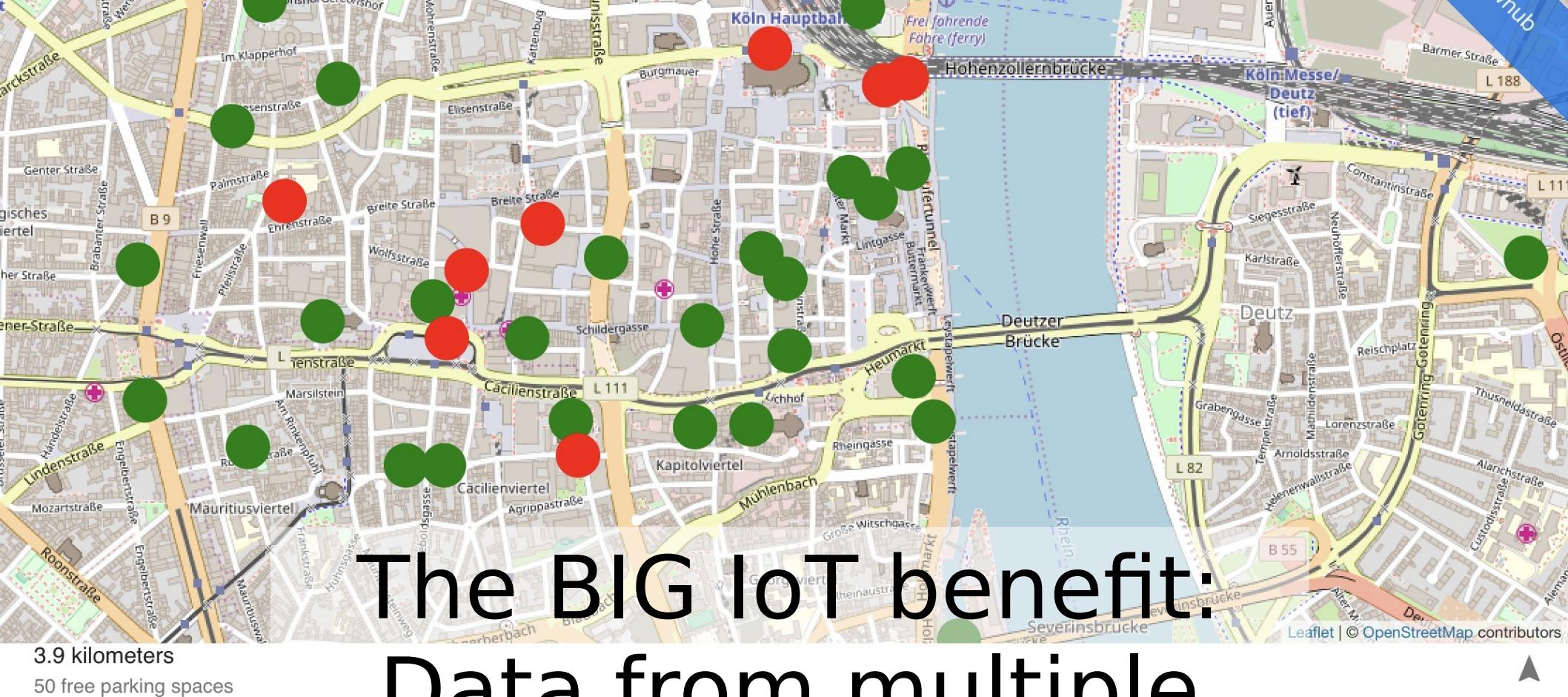


2.0 kilometers

No browser bar,  
more space for the app



Shows in running apps together with native



# The BIG IoT benefit: Data from multiple providers

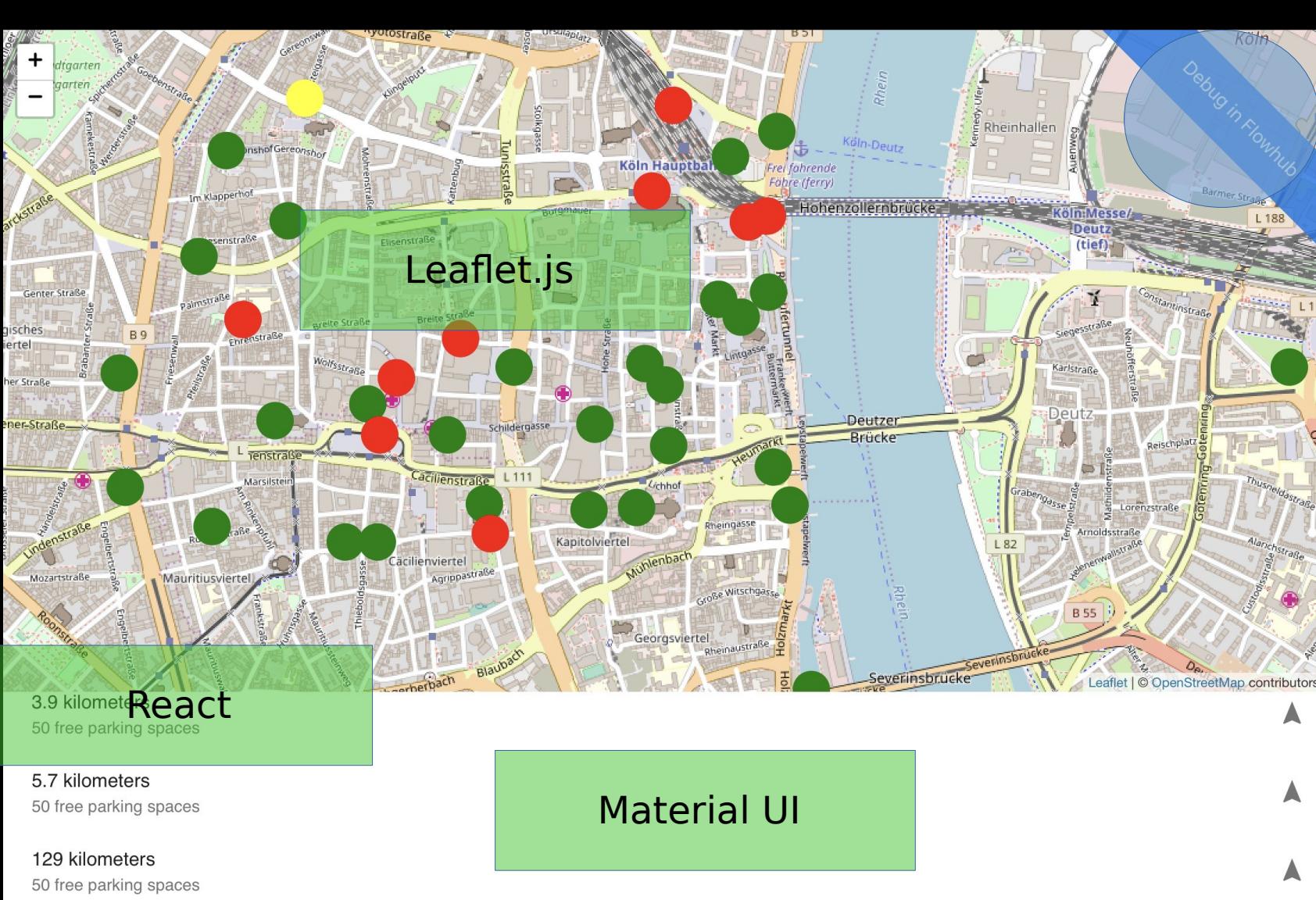
# Park My Car - summary

- Minimally useful
- Android, iOS, desktop
- Integrates like a native app
- Demonstrates BIG IoT in browser app

<https://flowhub.github.io/bigiot-driver-app>

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# Under the hood



NoFlo

noflo-bigiot

bigiot-js

5.7 kilometers

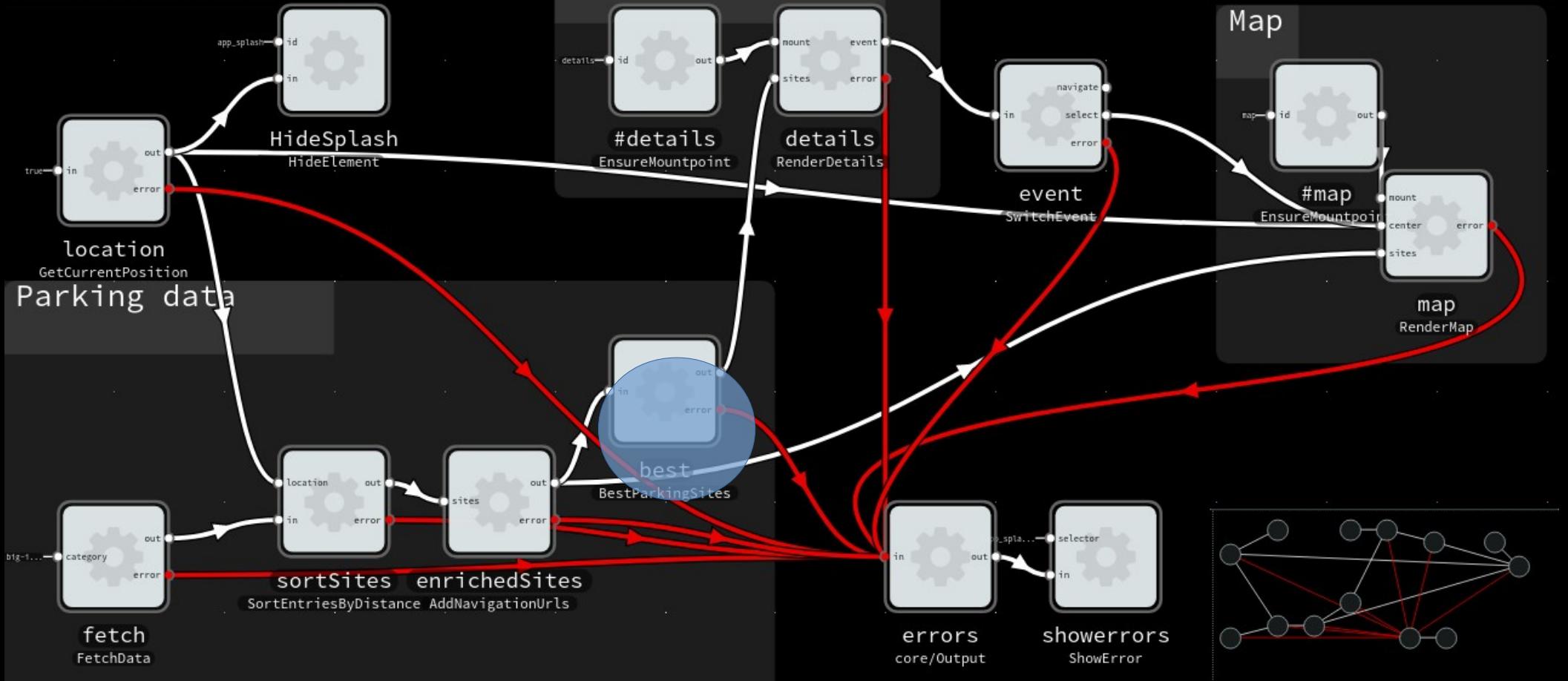
50 free parking spaces

129 kilometers

50 free parking spaces

## Details list

Select runtime

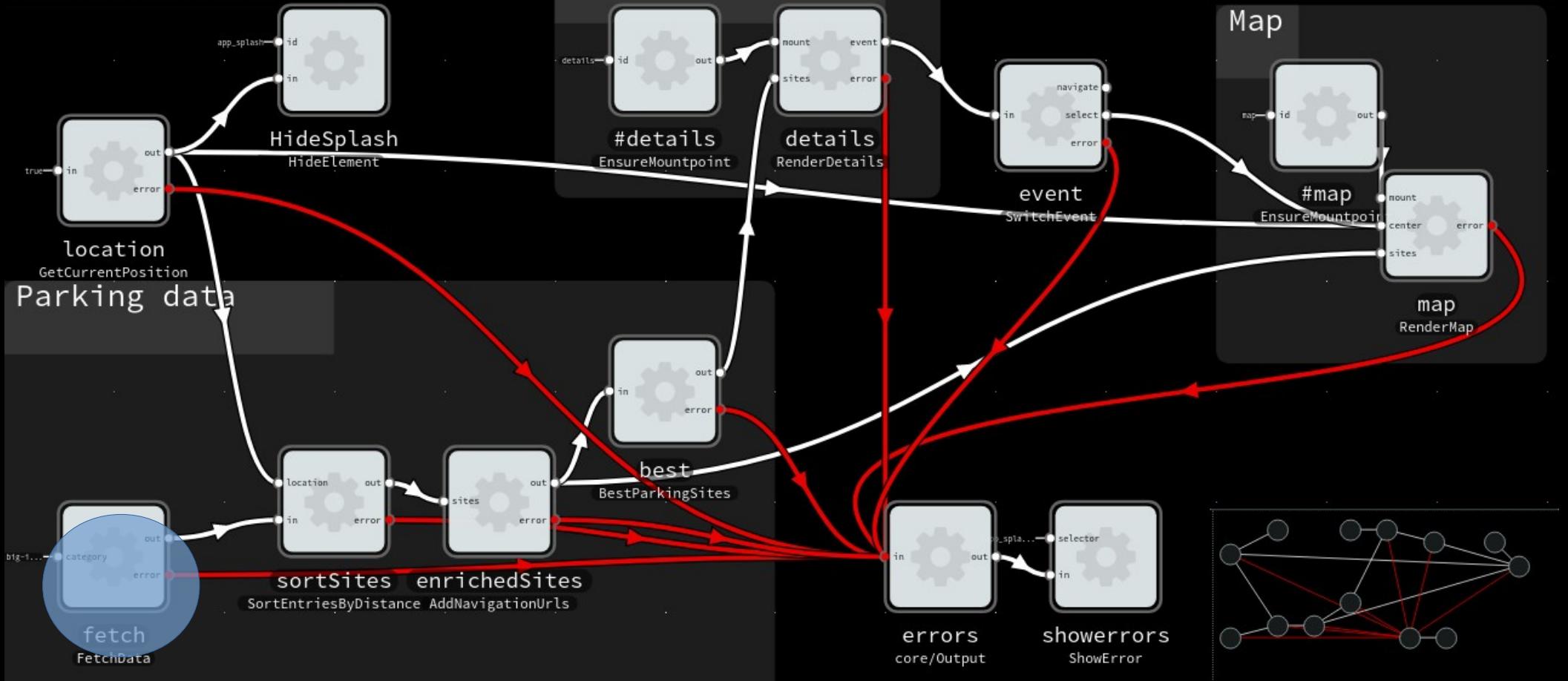


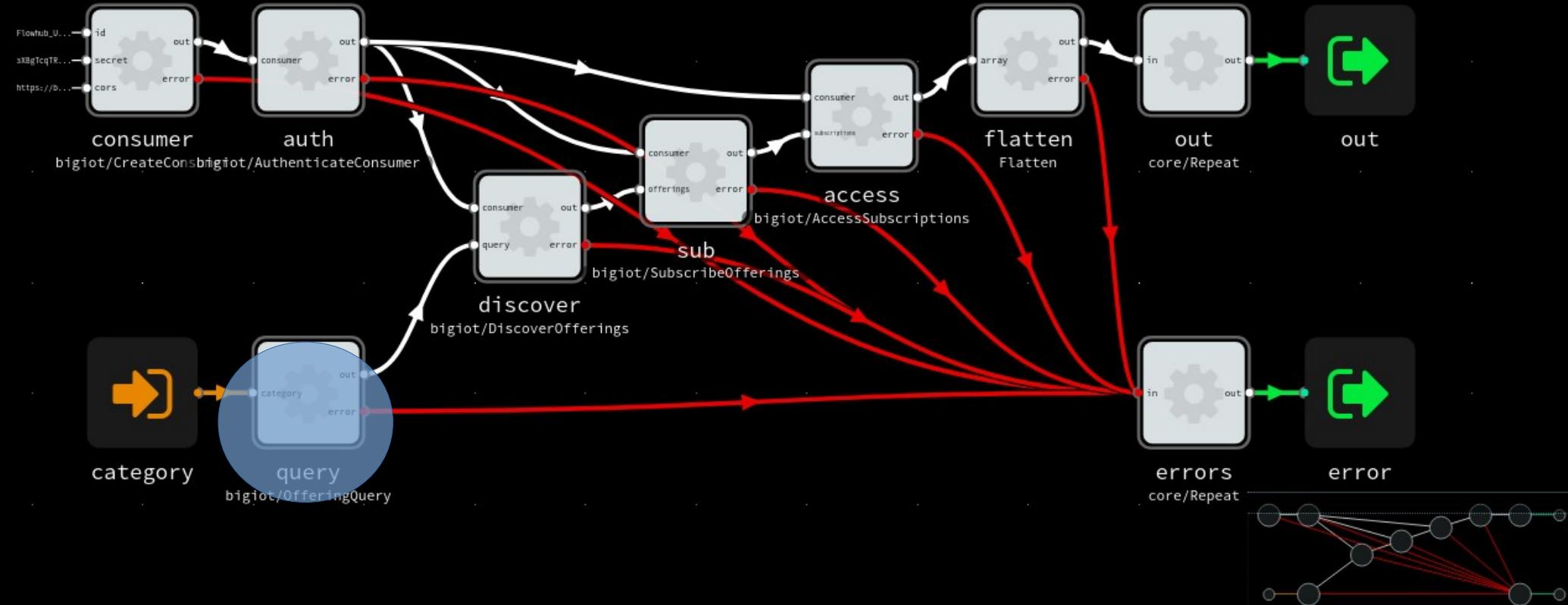
```
11 function bestN(sites, n) {  
12  
13   const best = sites.filter(siteHasVacantSpots).slice(0, n);  
14  
15   return best;  
16 }  
17  
18 exports.getComponent = () => {  
19   const c = new noflo.Component();  
20   c.description = 'Return the N best parking spots';  
21   c.icon = 'expand-arrows-alt';  
22   c.inPorts.add('in', {  
23     datatype: 'array',  
24     required: true,  
25   });  
26   c.inPorts.add('n', {  
27     datatype: 'int',  
28     required: false,  
29     control: true,  
30     default: 10,  
31   });  
32   c.outPorts.add('out', {  
33     datatype: 'array',  
34   });
```

bigiot-driver-app/  
BestParkingSites

## Details list

Select runtime





```
1 const noflo = require('noflo');
2 const bigiot = require('bigiot-js');
3
4 function offeringQuery(category, options = {}) {
5   const name = options.name || category;
6   const query = new bigiot.offering(name, category);
7
8   // Defaults to giving everything
9   delete query.license;
10  delete query.extent;
11  delete query.price;
12
13  Object.keys(options).forEach((key) => {
14    query[key] = options[key];
15  });
16
17  return query;
18}
19
20 exports.getComponent = () => noflo.asComponent(offeringQuery, {
21  icon: null,
22  description: 'Create Offering Query',
23});
```

bigiot/  
OfferingQuery

# bigiot-js

- JavaScript library for BIG IoT Marketplace
- alternative to BIG IoT Java lib
- Provider and consumer support
- Open Call 1: Node.js only
- **Open Call 2: Browser support**

<http://github.com/flowhub/bigiot-js>

# Browser support finalized



jonnor released this on Aug 7 · 3 commits to master since this release

## ▼ Assets 2

[Source code \(zip\)](#)

since bigiot-js 0.6.3

[Source code \(tar.gz\)](#)

bigiot-js now works in the browser (consumer only). It can either be built with webpack and NPM include the pre-built JS library via a script tag.

Note that for now CORS proxy is needed. A service that can be used for testing has been setup recommended software for use in production.

For documentation see the README and example code

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# Challenges & Issues

# API requirements for browsers

- Use SSL certificate issued by trusted certificate authority
- Allow Cross-Origin-Request-Sharing (CORS)

# Issue: Marketplace API not CORS enabled

● Failed to load <https://market.big-iot.org/accessToken?clientId=Flc85gpT5Cy0djyd0zulw%3D%3D>: No 'Access-Control-Allow-Origin' header therefore not allowed access. If an opaque response serves your resource with CORS disabled.

- Fixed in market-dev!
- Gitlab: marketplace#42

# Issue: Marketplace SSL soon untrusted

• <https://market.big-iot.org> will be distrusted in M70. consumer  
loading these resources. See <https://g.co/chrome/symantecpkicerts> f

- Chrome 70 will remove certificate.
- In BETA now
- **No progress?**
- Gitlab: marketplace-portal#44

# Issue: Many offerings not browser compatible

Using defaults in Java Provider:

- Self-signed SSL certificate
- CORS headers not enabled

Category	Provider	Offering	Data	SSL	CORS
urn:big-iot:ChargingStationCategory	BarcelonaPilot-BarcelonaProvider	ChargingStationsOffering	✓	✗	✗
urn:big-iot:ChargingStationCategory	VMZBerlin-vmzProvider	availableevchargingservice	✓	✗	✗
urn:big-iot:ChargingStationCategory	VMZBerlin-vmzProvider	availableevcharginginfo	✓	✗	✗
urn:big-iot:BikeSharingStationCategory	VMZBerlin-vmzProvider	availablebikesharingservice	✓	✗	✗
urn:big-iot:BikeSharingStationCategory	VMZBerlin-vmzProvider	availablebikesharinginfo	✓	✗	✗
urn:big-iot:BikeSharingStationCategory	CSI-CsiProvider	Vercelli_BikeStationAvailability_Latest	✓	✗	✗
urn:big-iot:BikeSharingStationCategory	CSI-CsiProvider	Biella_BikeStationAvailability_Latest	✓	✗	✗
urn:big-iot:BikeSharingStationCategory	SmartSantander-BigSantander	SantanderBikeSharingStationsOffering	✓	✓	✗
urn:big-iot:BikeSharingStationCategory	BarcelonaPilot-BarcelonaProvider	BikesOffering	✓	✗	✗
urn:big-iot:ParkingSpaceCategory	BarcelonaPilot-WorldSensing	UPC_Virtual_ParkingAll	✓	✗	✗
urn:big-iot:ParkingSpaceCategory	BarcelonaPilot-WorldSensing	LesCorts_ParkingAll	✓	✗	✗
urn:big-iot:ParkingSpaceCategory	VMZBerlin-vmzProvider	availableparkingservice	✓	✗	✗
urn:big-iot:ParkingSpaceCategory	SmartSantander-BigSantander	SantanderParkingSpaceAvailabilityOffering	✓	✓	✗
urn:big-iot:ParkingSpaceCategory	BarcelonaPilot-WorldSensing	UPC_Virtual_ParkingPriceTypeStreetNameDescriptionByPosition	✓	✗	✗
urn:big-iot:ParkingSpaceCategory	BarcelonaPilot-WorldSensing	LesCorts_ParkingPriceTypeStreetNameDescriptionByPosition	✓	✗	✗
urn:big-iot:ParkingSpaceCategory	VMZBerlin-vmzProvider	availableparkinginfo	✓	✗	✗
urn:big-iot:ParkingSpaceCategory	CSI-CsiProvider	Vercelli_ParkingSpotAvailability_Latest_Integration	✓	✗	✗
urn:big-iot:ParkingSpaceCategory	CSI-CsiProvider	Vercelli_ParkingSpotAvailability_Latest	✓	✗	✗
urn:big-iot:TrafficDataCategory	Terracom-SpotyPal	Terracom_SpotyPal_Turin_Traffic_Low_Speed_Areas	✓	✗	✗
urn:big-iot:TrafficDataCategory	Terracom-SpotyPal	Terracom_SpotyPal_Turin_Traffic_Historical_Data	✓	✗	✗
urn:big-iot:TrafficDataCategory	Terracom-SpotyPal	Terracom_SpotyPal_Turin_Traffic_For_Specific_Hours	✓	✗	✗
urn:big-iot:TrafficDataCategory	VMZBerlin-vmzProvider	panelmessageinfo	✓	✗	✗
urn:big-iot:TrafficDataCategory	VMZBerlin-vmzProvider	trafficflowinfo	✓	✗	✗
urn:big-iot:TrafficDataCategory	Terracom-SpotyPal	Terracom_SpotyPal_Turin_Average_Speed	✓	✗	✗
urn:big-iot:TrafficDataCategory	SmartSantander-BigSantander	SantanderTrafficConditionsOffering	✓	✓	✗

<https://flowhub.github.io/bigiot-js/offers.html>

# Workaround: Use CORS proxy

<https://github.com/flowhub/bigiot-cors>

CORS Anywhere proxy

Deployed live on Heroku

Enable using one-line configuration in  
bigiot-js / noflo-bigiot

```
const corsproxy = 'https://bigiot-cors.herokuapp.com';
```

```
const consumer = new bigiot.consumer(id, secret, market, corsproxy);
```

# Fix: Enable CORS in provider

```
((EmbeddedSpark)provider.getEmbeddedServer()).enableCorsAll();
```

# Fix: Setup SSL in provider

A) Setup cert in Java Provider lib  
ex: Santander offerings

B) Use a HTTP proxy  
ex: nginx/Apache/Caddy...  
or Heroku/Cloudflare/GCE/...

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# Extension summary

- ✓ All deliverables completed
- ✓ Can develop BIG IoT apps in browser
- ✓ demonstrated by “Park My Car” app

**BUT** must currently use proxy  
until SSL+CORS fix  
in Marketplace and Offerings

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