

# The Story of **OwnTracks**

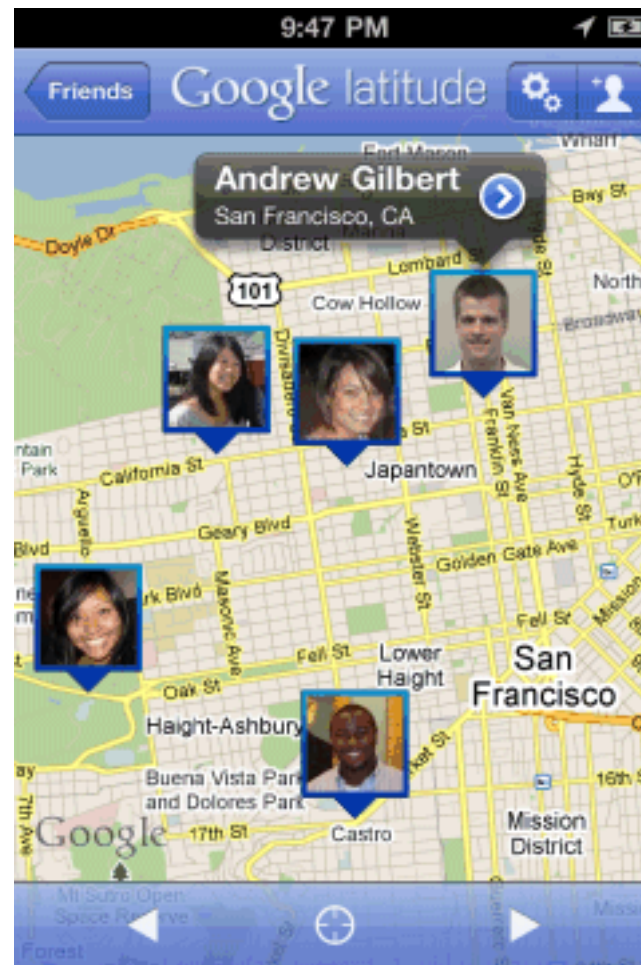
Jan-Piet Mens

November 2018

@jpmens

**@jpmens**: consultant, part-time admin, trainer, small-scale fiddler, loves **plain text**, and things which **work**. Contributes to Ansible, dreamed up **OwnTracks**, chases software bugs, and it's often not a DNS problem.

# Once upon a time ...

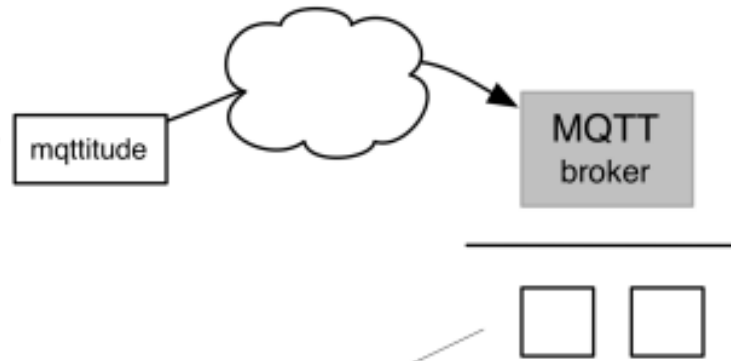


# Their **big** data

```
{
  "features": [
    {
      "properties": {
        "placardHeight": 59,
        "placardWidth": 56,
        "id": "-8307528510653225244",
        "accuracyInMeters": 1414,
        "timeStamp": 1338351805,
        "reverseGeocode": "Friedrichsdorf, Germany",
        "photoUrl": "http://www.google.com/latitude/apps/badge/api?type=photo&photo=nkj-
mzcBAAA.dxs397bzb01k\nl-Dgy0qFIg.vWW5zvcxLgY3uaJrvEZnJA",
        "photoWidth": 96,
        "photoHeight": 96,
        "placardUrl": "http://www.google.com/latitude/apps/badge/api?type=photo_placard&photo=nkj-
mzcBAAA.dx\ns397bzb01kl-Dgy0qFIg.vWW5zvcxLgY3uaJrvEZnJA&moving=true&stale=true&lod=1&format=png"
      },
      "geometry": {
        "coordinates": [
          8.65486,
          50.238862
        ],
        "type": "Point"
      },
      "type": "Feature"
    }
  ],
  "type": "FeatureCollection"
}
```

# A crazy idea ...

*mqttitude* app on smartphone  
periodically publishes lat/lon to  
MQTT topic



*Clients listen for messages  
they're interested in and  
process them*

## Privacy, Security, Easy data

# and the **apps**?

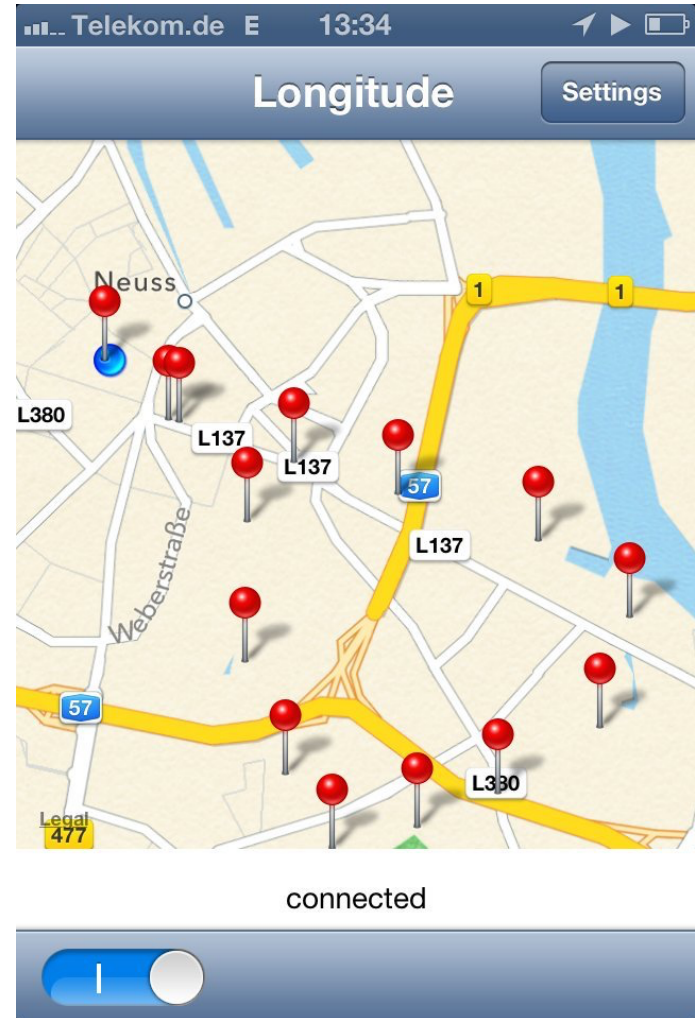
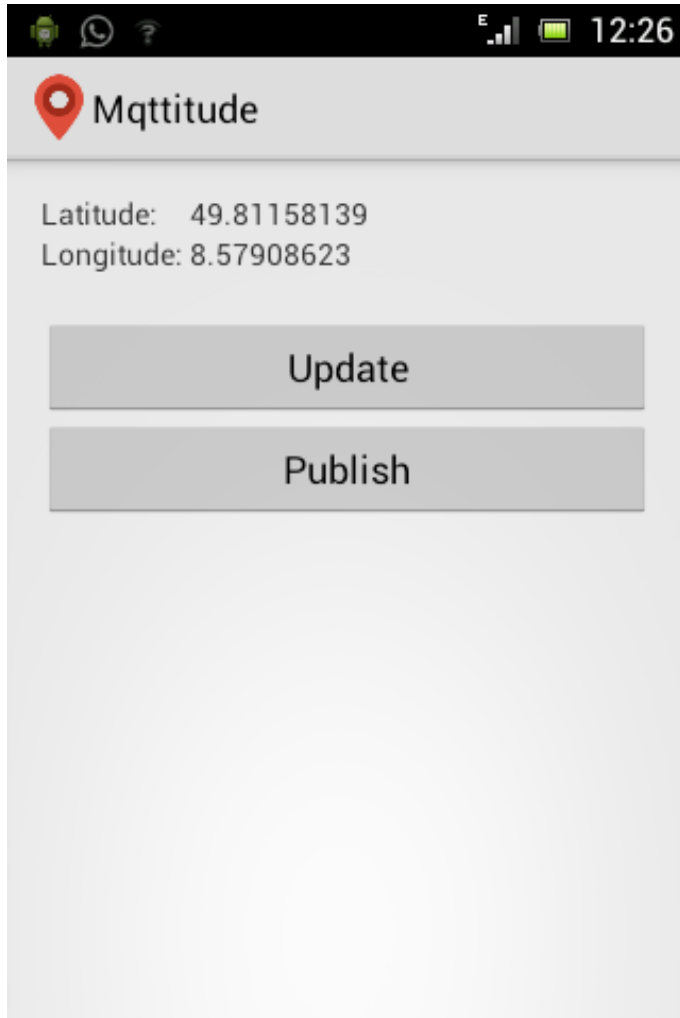
Christoph Krey



Alexander Rust



# ... MQTTitude



# #getrichfast



Andy Stanford-Clark

@andysc



+ Follow

Woooo... This is cool! [mqttitude.org](http://mqttitude.org) the  
[#MQTT](#) alternative to [#latitude](#) :D [#sweet](#)

↩ Reply ↻ Retweet ★ Favorite ⋮ More

RETWEETS

13

FAVORITES

12



11:44 PM - 27 Aug 2013



# MQTT what?!



**OwnTracks**  
@OwnTracks



Following

We've decided to opt for a less geeky name. MQTTitude becomes OwnTracks. // You don't have to re-follow us -- you're doing that already. :-)



**Marshall T. Rose**  
@\_mtr



+ Follow

@OwnTracks sigh. The geeky name had attitude. This one is bland. Please revert commit...



**Joerg Wende**  
@joerg\_wende



@OwnTracks Like the new name ...



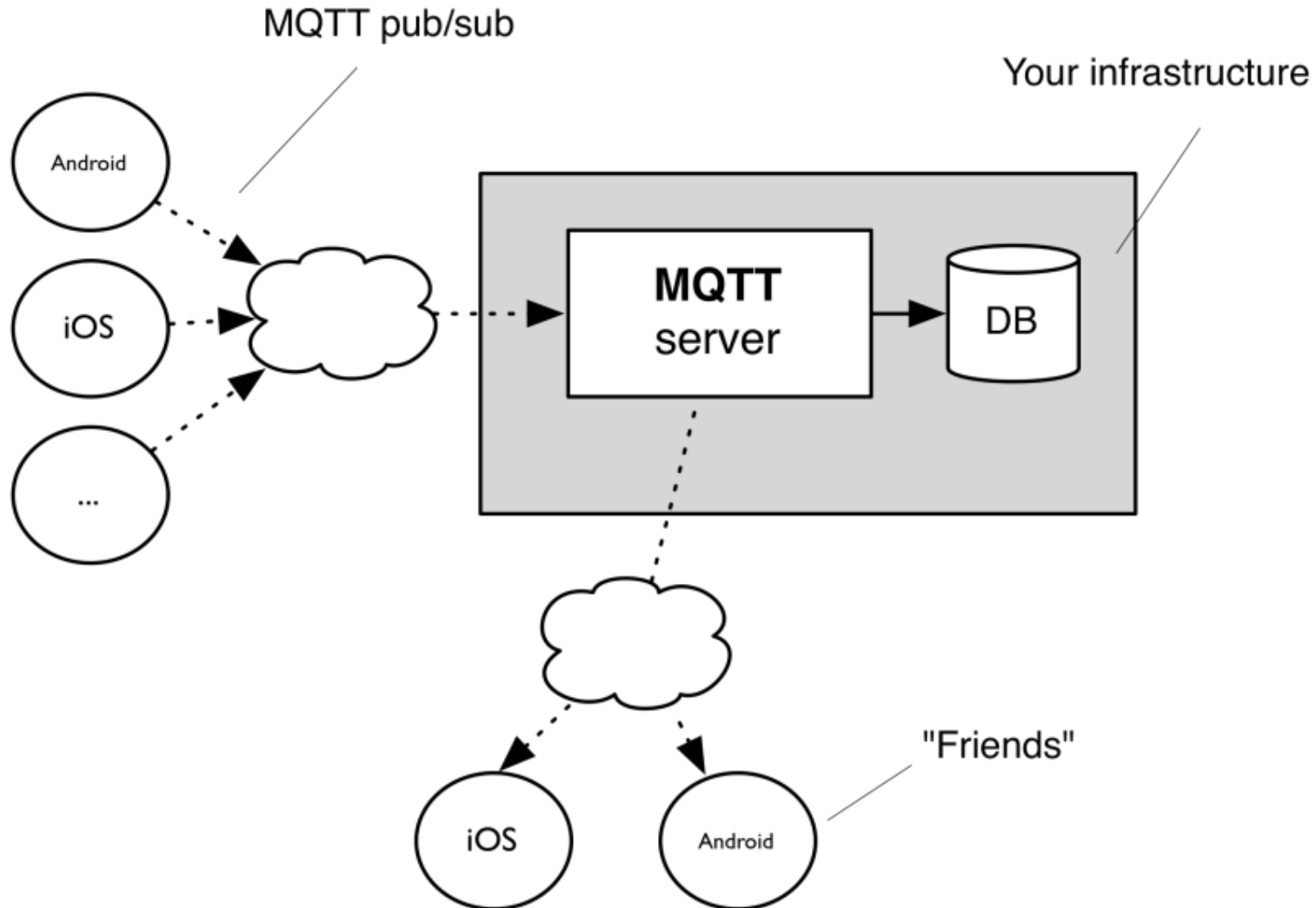
**Bryan Boyd**  
@bryanboyd



+ Follow

@OwnTracks I don't know if a latitude-type service can ever be... less geeky :-)) love the name!

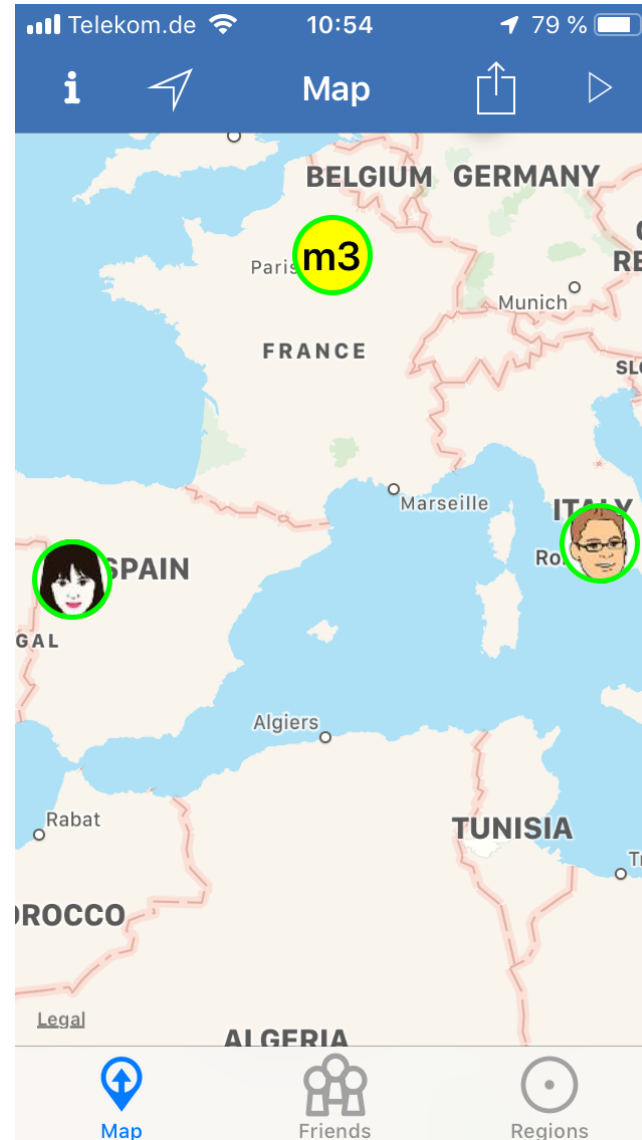
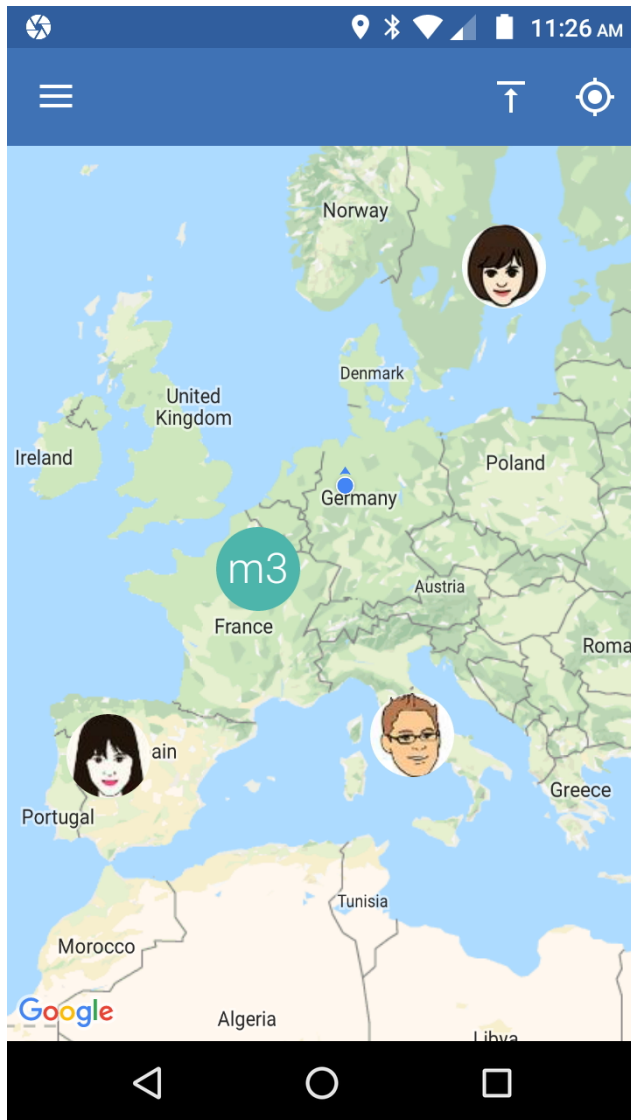
# Your own infra



# our data: **JSON**

```
{  
  "_type": "location",  
  "batt": 21,  
  "lat": 48.85833,  
  "t": "m",  
  "lon": 3.29513,  
  "acc": 5,  
  "tid": "JJ",  
  "vel": 8,  
  "cog": 143,  
  "alt": 143,  
  "tst": 1540285680  
}
```

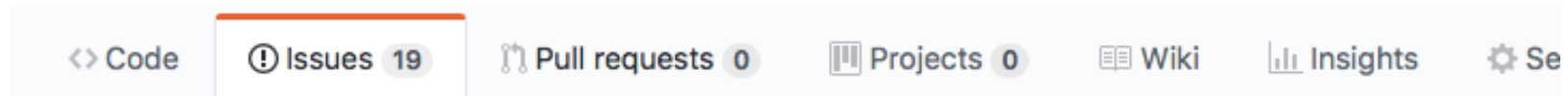
# Our apps today



# MQTT for iOS?

<b>libmosquitto</b>	<b>MQTTKit</b>	<b>MqttSDK</b>	<b>MQTTClient</b>
<b>3.1.1</b>	<b>3.1</b>	<b>3.1</b>	<b>3.1.1</b>
<b>libmosquitto</b>	<b>libmosquitto</b>	<b>native</b>	<b>native</b>
<b>(openssl)</b>		<b>CFNetwork</b>	<b>CFNetwork</b>
<b>socket</b>	<b>socket</b>		

# Bugs, bugs, **more** bugs



Significant mode not happening at 800kph #388


As anybody who does so can attest to, Open Source can be fun and *interesting*.

# Los amigos


Telekom.de 10:53 79 %

**Friends**


---

 **m3**  
D6  
77510 Sablonnières  
10:53 France


---

 **Astrid Amdahl**  
Högåsvägen 12  
172 37 Sundbyberg  
10:45 Sweden


---

 **John Public**  
3690 Leeds Ave  
North Charleston SC 29405  
10:45 United States

---

 **Arturo Marone**  
Piazza di Porta Capena  
00184 Rome Lazio  
10:45 Italy

---

 **Susana Duarte**  
Calle del Rector Lucena, 15-19  
37002 Salamanca Castile and León  
10:45 Spain

---

Map Friends Regions

11:31 AM

**Susana Duarte** 11:2...

40.967068 : -5.663247

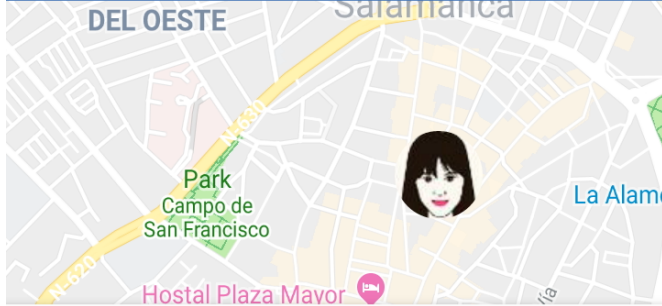
0  
Accuracy

---

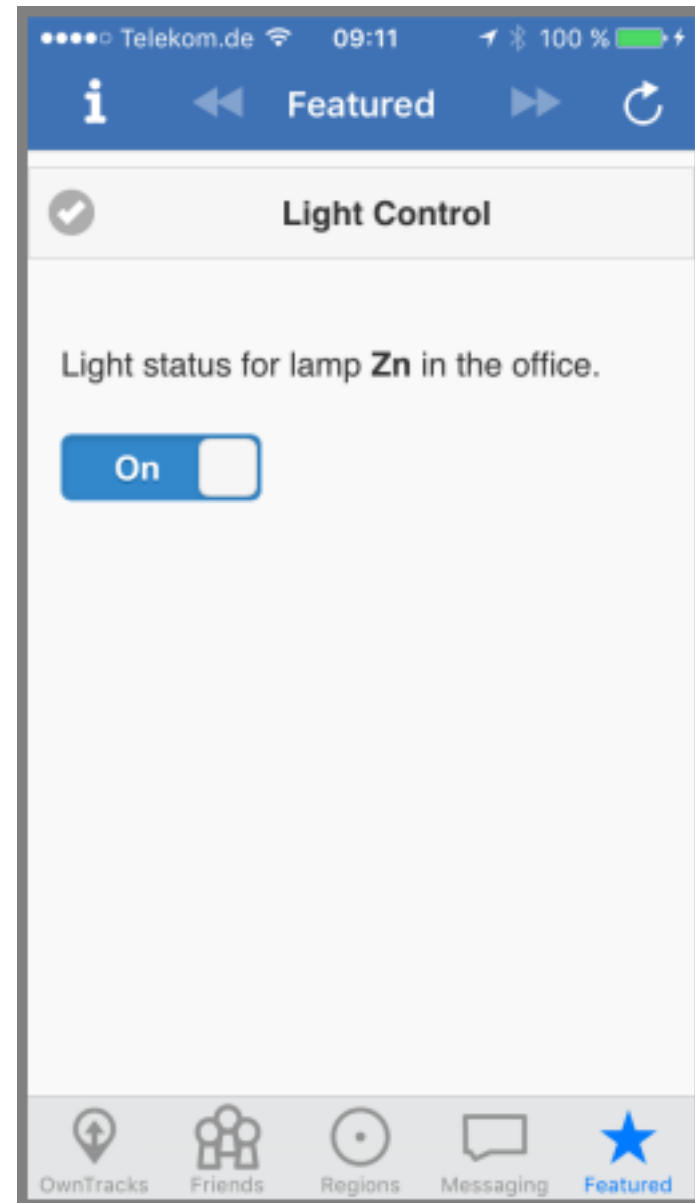
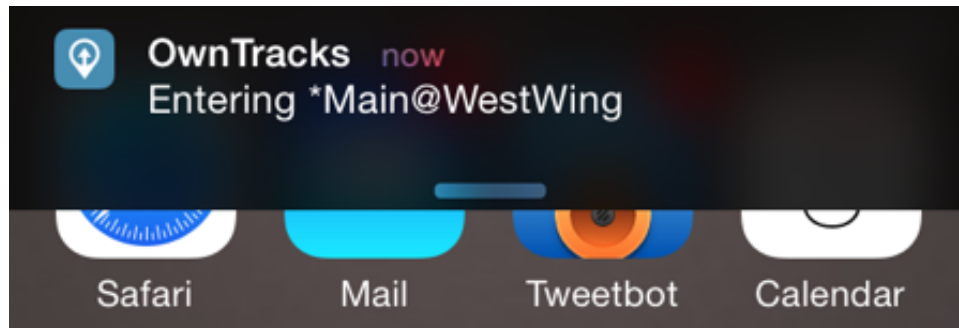
sD  
Tracker ID

owntracks/user/susanad  
Identifier

...



# we call them **features**



**Jan-Piet Mens**

jpm 03-Jun 14:42:00Z



**Jane Jolie**

jjolie 03-Jun 11:55:20Z



**Christoph Krey**

cky 03-Jun 08:43:40Z



# HTT-what?

```
<?php
# Obtain the JSON payload from an OwnTracks app POSTed via HTTP
# and insert into database table.

header("Content-type: application/json");

$payload = file_get_contents("php://input");
$data = @json_decode($payload, true);

if ($data['_type'] == 'location') {

    # CREATE TABLE locations (dt TIMESTAMP, tid CHAR(2), lat DECIMAL(9,6), lon DECIMAL(9,6))
    $mysqli = new mysqli("127.0.0.1", "user", "password", "database");

    $tst = $data['tst'];
    $lat = $data['lat'];
    $lon = $data['lon'];
    $tid = $data['tid'];

    # Convert timestamp to a format suitable for mysql
    $dt = date('Y-m-d H:i:s', $tst);

    $sql = "INSERT INTO locations (dt, tid, lat, lon) VALUES (?, ?, ?, ?)";
    $stmt = $mysqli->prepare($sql);
    # bind parameters (s = string, i = integer, d = double, b = blob)
    $stmt->bind_param('ssdd', $dt, $tid, $lat, $lon);
    $stmt->execute();
    $stmt->close();
}

$response = array();
# optionally add objects to return to the app (e.g.
# friends or cards)
print json_encode($response);
?>
```

# In a **vehicle**?



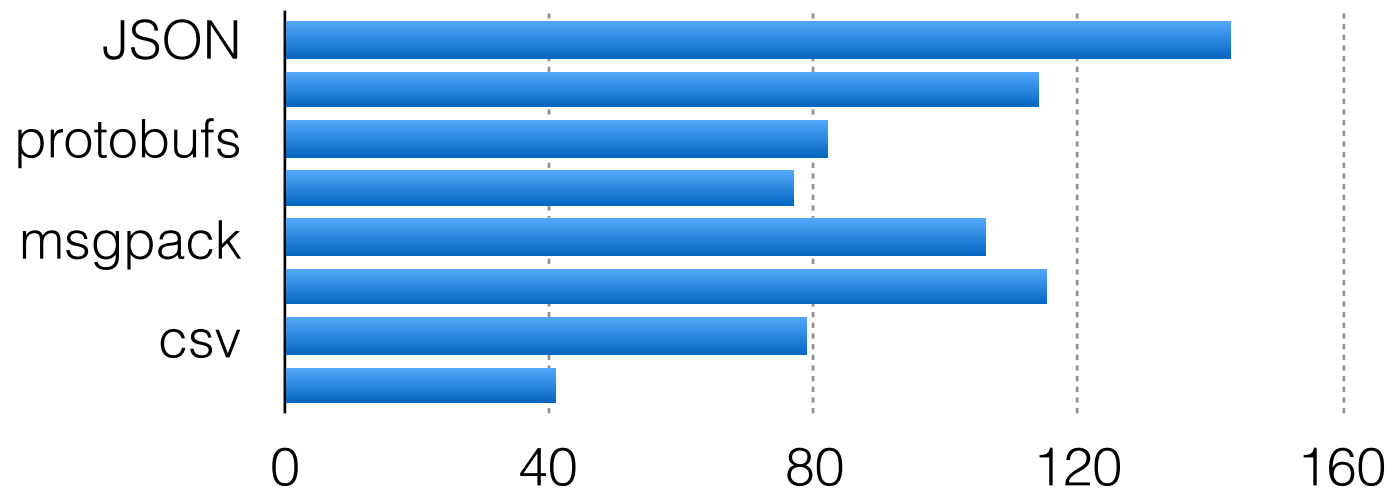
Ha, ha, ha, ha. **No.**

# For vehicles!



# to pack or not to pack

```
{ "_type": "location", "t": "L", "tid": "C2", "tst": "1413805066", "lon": "13.532628", "lat": "52.432363", "cog": 0, "vel": 0, "alt": 30, "dist": 0, "trip": 0 }
```



X0,542A46AA,k,50365854,7575769,26,4,7,5,872

↑   ↑   ↑   ↑   ↑   ↑   ↑   ↑   ↑   ↑  
tid   tst   t   lat   lon   cog   vel   alt   dist   trip

# SIM cards

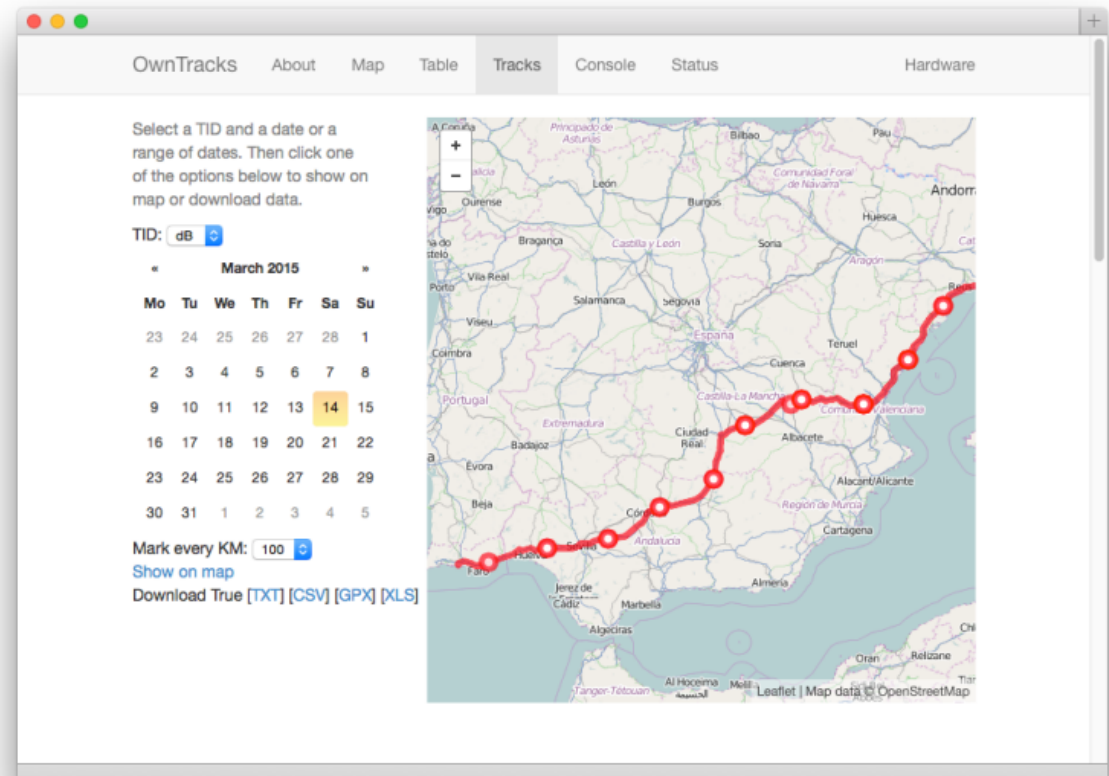
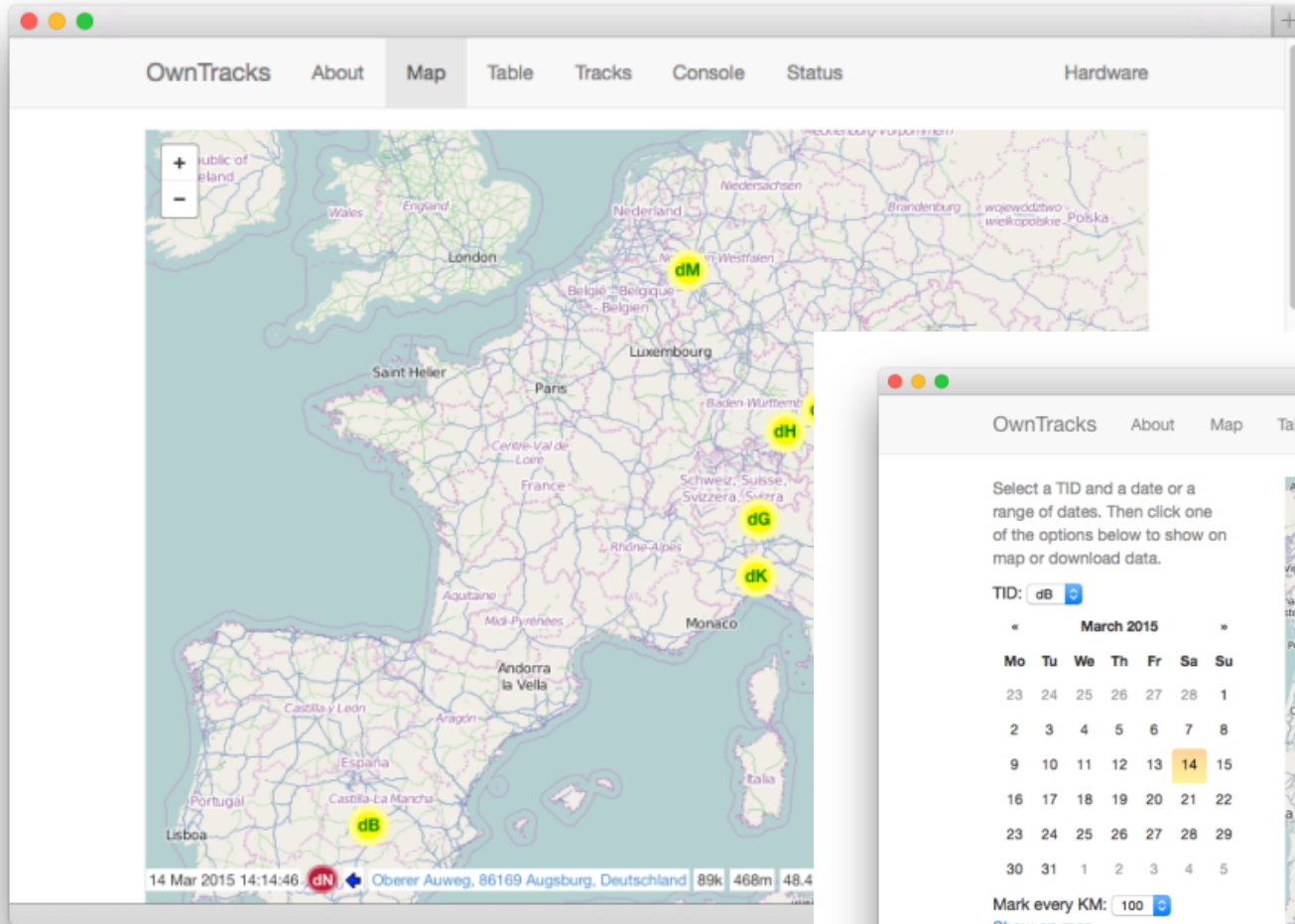
Roaming

Roaming

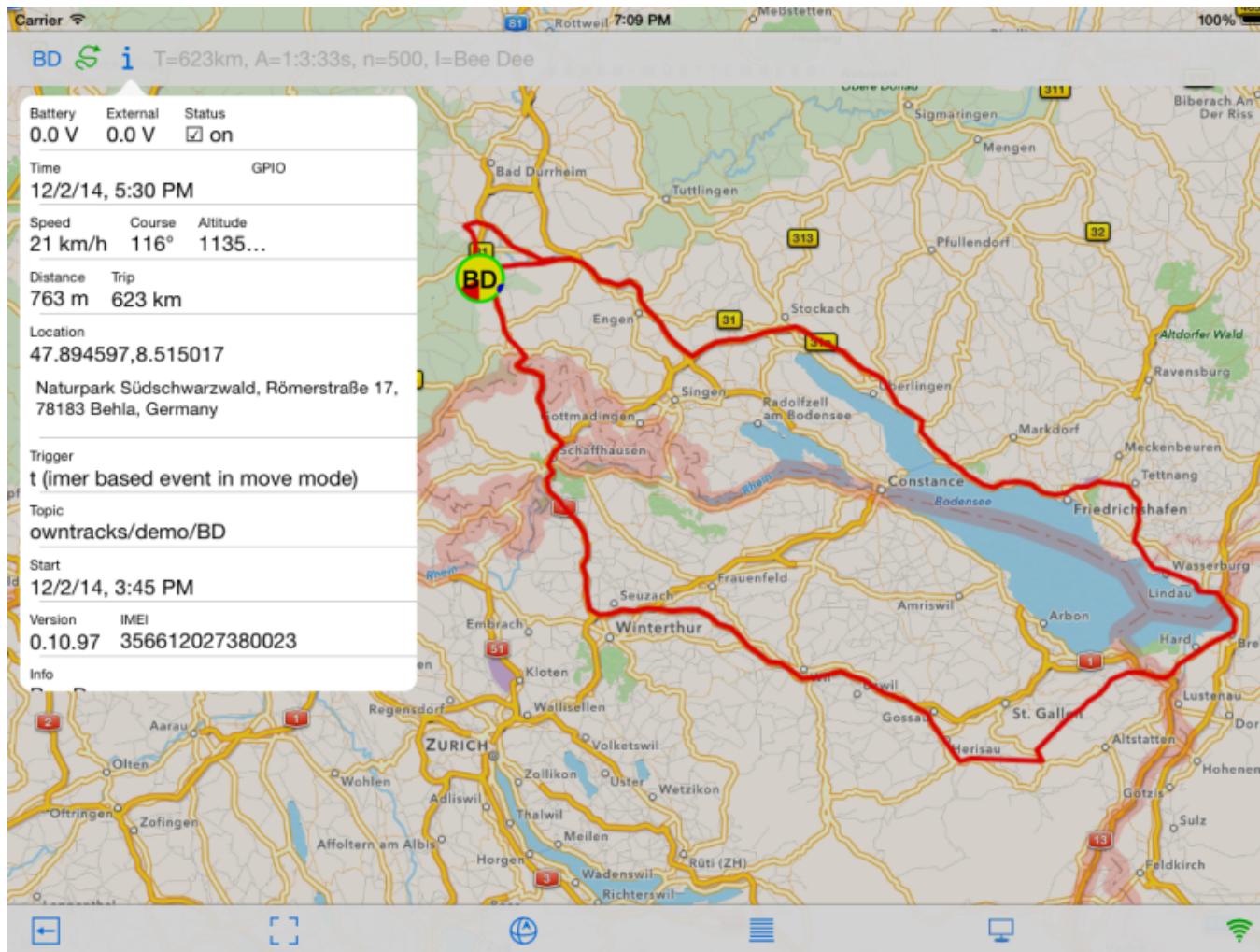
Roaming

Did I say “**roaming**”?

# Pista is born



# CTRL for Greenwich



iOS front-end (by Christoph), Python back-end

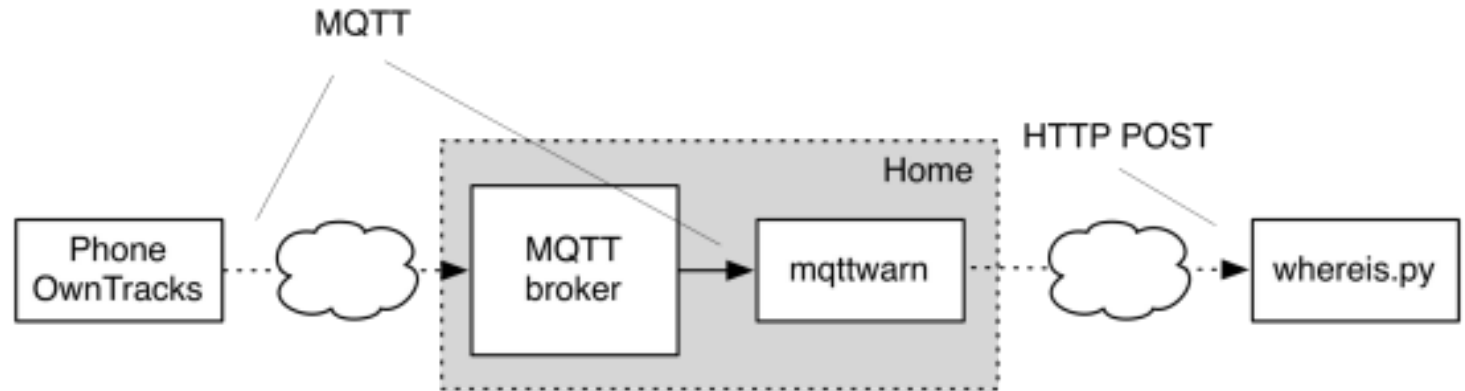
# UI? really? Proxy!



by Ben Jones ( @SumnerBoy )



# Own ideas



Commands matching /w

**/whereis** user

*[custom] Show where user is*

**/who**

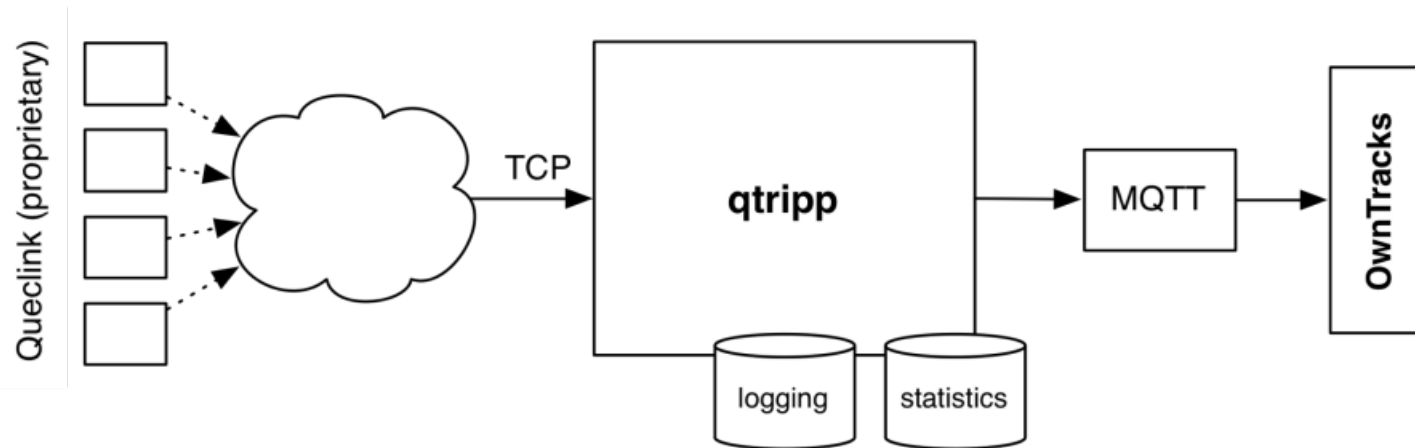
*List users in the current channel or group*



/w|



# Own vehicles



Smaller  
Cheaper  
More Reliable

our code is FLOSS



# Recorder

The image displays a web application interface with three overlapping browser windows. The top-left window shows a map of Hilversum, Netherlands, with a red dot indicating a location. The top-right window shows a map of Europe with a blue location pin over Spain and a popup for Susana Duarte. The bottom window shows a data table with columns for Date/Time, Name, TID, Battery, Vel, CoG, CC, and Address. The table contains five entries, with the last one highlighted in red. A search bar is located above the table, and a 'Reload data' button is at the top left of the table area. Below the table, it says 'Showing 1 to 5 of 5 entries' and there are toggle buttons for 'topic', 'user', and 'battery'.

localhost:8083/map/index.html?user=jpm&de

localhost:8083/last/index.html

localhost:8083/table/index.html

Reload data

Search:

Date/Time	Name	TID	Battery	Vel	CoG	CC	Address
16 Oct 2018 16:50:20	owntracks/jpm/moto3	m3	21%	8	143		<a href="#">La Terre Noire, 77510 Sablonnières, France</a>
16 Oct 2018 16:48:28	Astrid Amdahl	aA	-				<a href="#">Högåsvägen, 174 49 Sundbybergs kommun, Sweden</a>
16 Oct 2018 16:48:28	John Public	jP	-				<a href="#">North Charleston Fire Department Station 7, Leeds Ave, North Charleston, SC 29418, USA</a>
16 Oct 2018 16:48:28	Arturo Marone	mA	-				<a href="#">Rione XXI San Saba, Via Ercole Rosa, 00144 Rome RM, Italy</a>
16 Oct 2018 16:48:28	Susana Duarte	sD	-				<a href="#">Delegación de Hacienda, Calle Rector Lucena, 12-18, 37002 Salamanca, Spain</a>

Showing 1 to 5 of 5 entries

Toggle

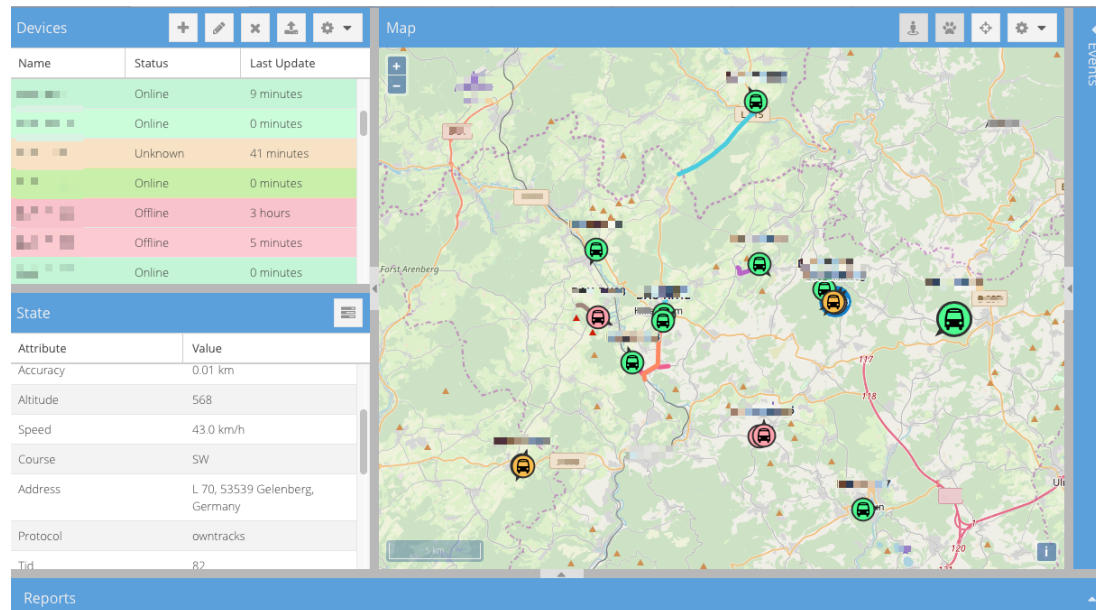
Susana Duarte  
Delegación de Hacienda, Calle Rector Lucena, 12-18, 37002 Salamanca, Spain  
unknown (40.967068,-5.663247) vs, c= 16 Oct 2018 16:48:28

© OpenStreetMap contributors

# Ecosystem

openHAB  
Home Assistant  
Traccar

...



The screenshot displays the Traccar web interface. On the left, there is a 'Devices' table with columns for Name, Status, and Last Update. Below it is a 'State' section with a table of attributes and values. The main area is a map showing several vehicle locations marked with icons. The interface includes navigation controls and a sidebar for 'Events'.

Name	Status	Last Update
[Icon]	Online	9 minutes
[Icon]	Online	0 minutes
[Icon]	Unknown	41 minutes
[Icon]	Online	0 minutes
[Icon]	Offline	3 hours
[Icon]	Offline	5 minutes
[Icon]	Online	0 minutes

Attribute	Value
Accuracy	0.01 km
Altitude	568
Speed	43.0 km/h
Course	SW
Address	L 70, 53539 Gelenberg, Germany
Protocol	owntracks
Tid	82

# World wide



I once blogged that that was the farthest away OwnTracks user; wrong: it's Ben in NZ of course.

**owntracks.org**

@owntracks

