AWS re:Invent

WPS307

Building a serverless GIS/geo-positioning and alerting solution

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Agenda

- Project overview and demo
- Taking the project further
- Open Discussion

Why did I build this project?



Commercial GPS monitoring solutions are expensive

- 24x7 GPS servers fleet running
- Commercial licenses for mapping

Lock-in proprietaries devices for each vendor

Geofencing from a static reference point and alerts.

- What if both the reference point and the asset to be tracked move?

Subscriptions to notification services

Design Requirements for the solution:



Serverless: No GPS server to mantain



Multi-device: Ingest GPS signal from mobile phones, IoT or GPS-GPRS devices and multiple formats (NMEA ,etc..)



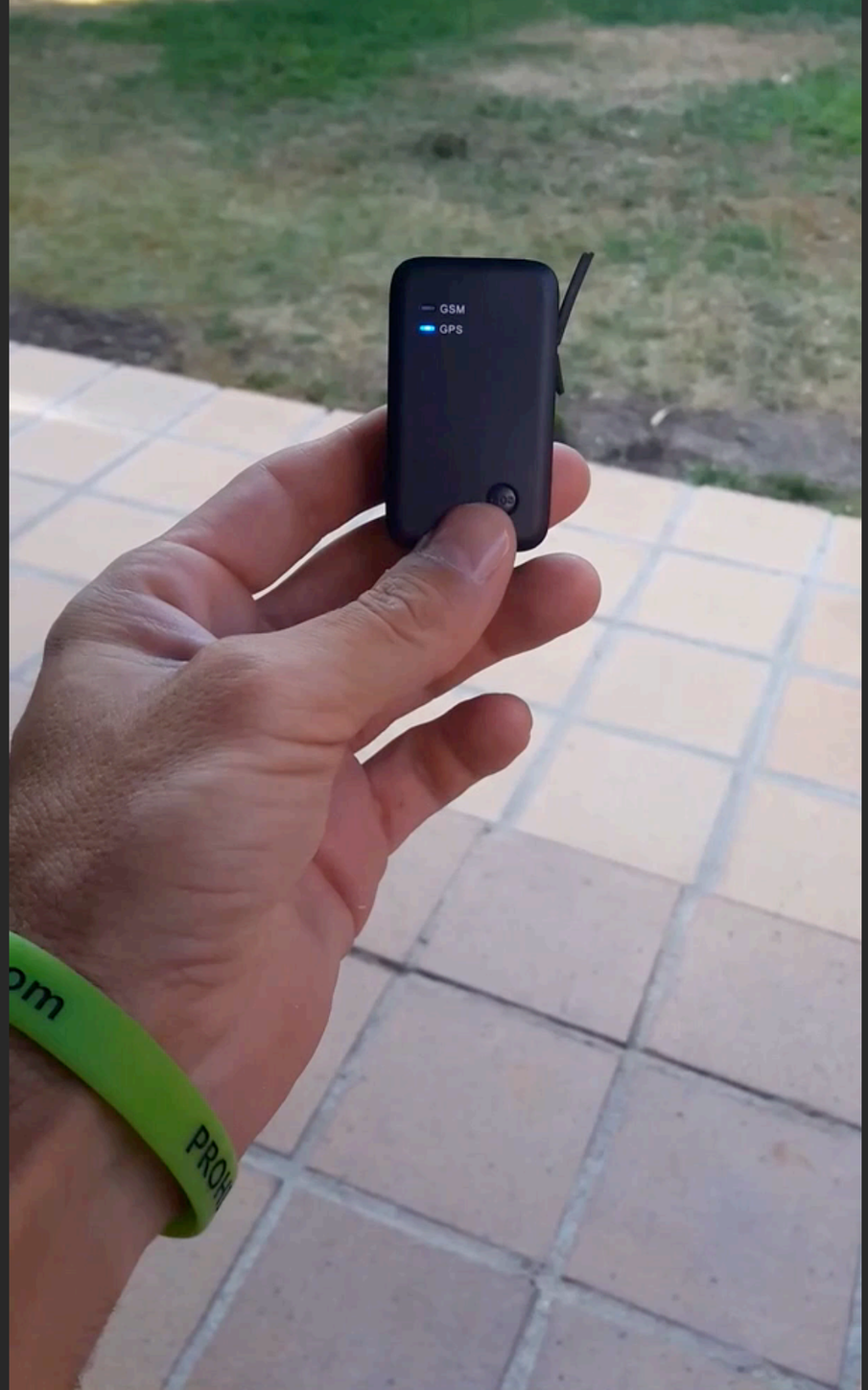
Use **Open Data** for maps browsing

Video

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GSM
GPS

Project Overview

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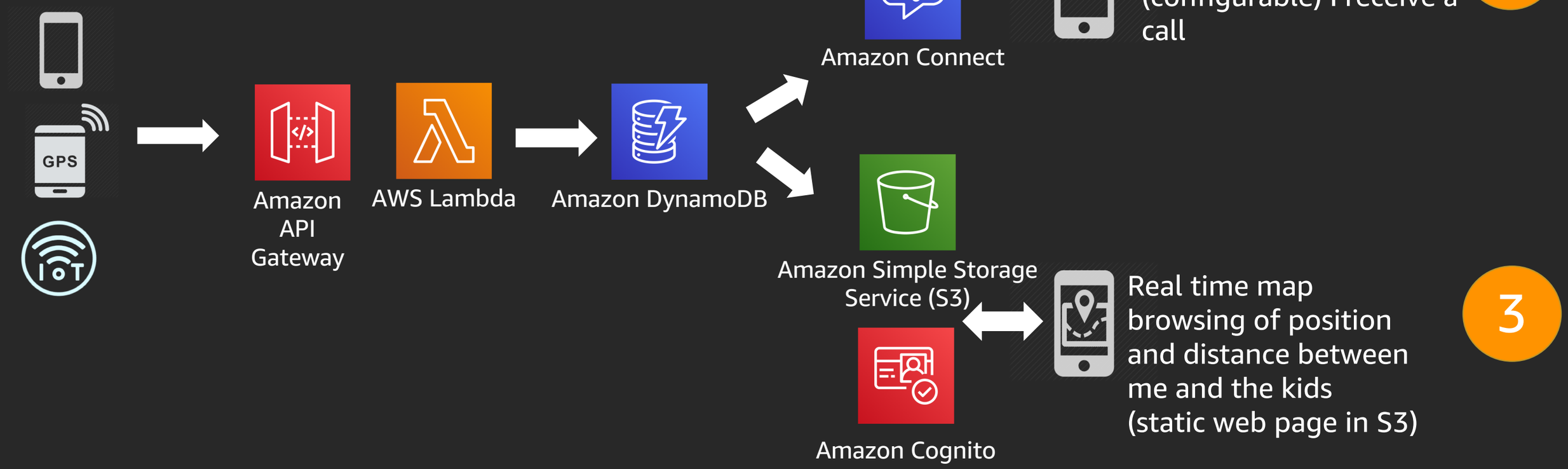
Architecture of the project:

1

Ingest data from my mobile GPS and my kid's GPS device. (Or mobile or IoT device)

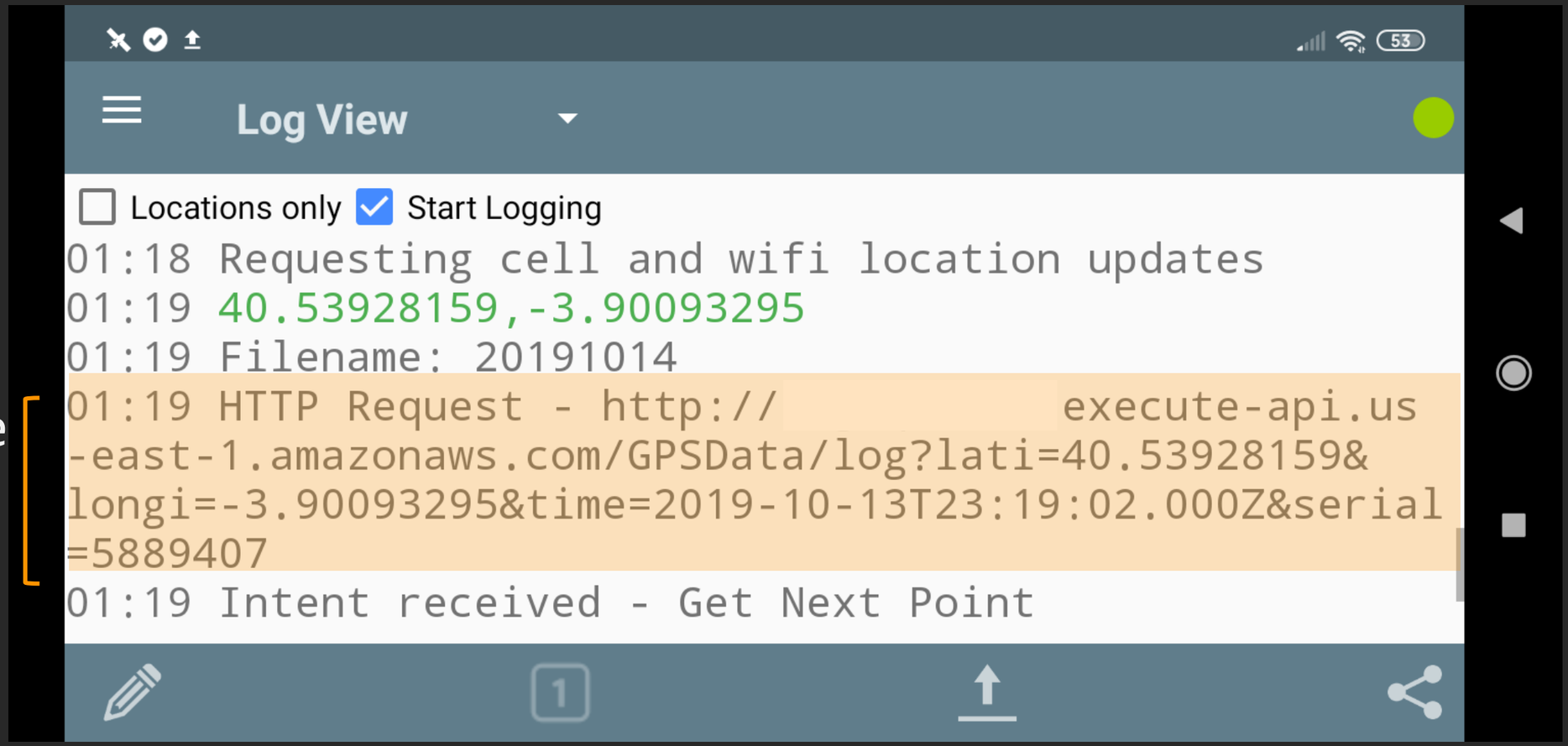
2

Location Data Stored In DynamoDB through API Gateway. No GPS Server running to ingest



Longitude and Latitude in query parameters

Customizable and App defined



[GPSLogger mobile App screenshot, original API Gateway removed]

GPS NMEA Standard Format – GPRMC sentences

query=imei=357xxxxxxxx12&rmc=$GPRMC,002347.00,V,4032.35096,N,00354.04761,W,0.023,,210818,,,A*69,AUTO,3661,45,9,0,99.9,C0,0,0,0,M1.

[Longitude and latitude in the format (d)ddmm.mmmm, where d=degrees and m=minutes]

IMEA™
International Marine Electronics Alliance

Other use cases:



Mental disorders: (e.g.: Alzheimer patients), care takers alerted if patients go too far from their home or other point of reference.

Special needs kids Tracking: Kids travelling outdoors with school, teachers can track they don´t get too far from the group during the activity.

Seniors tracking: Senior people living alone. Tracking their walks and detecting possible issues.

Of course, affordable fleet tracking or pet tracking (no GPS servers, scalable) for commercial applications.

Taking the project further

1. Multi-tenancy and Users management at scale
2. Scalability of the solution
3. Add features with Analytic and Machine Learning.
4. Build your own map tiles with Open Data OSM Dataset.
5. Location based proximity-alert

Thank you!

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