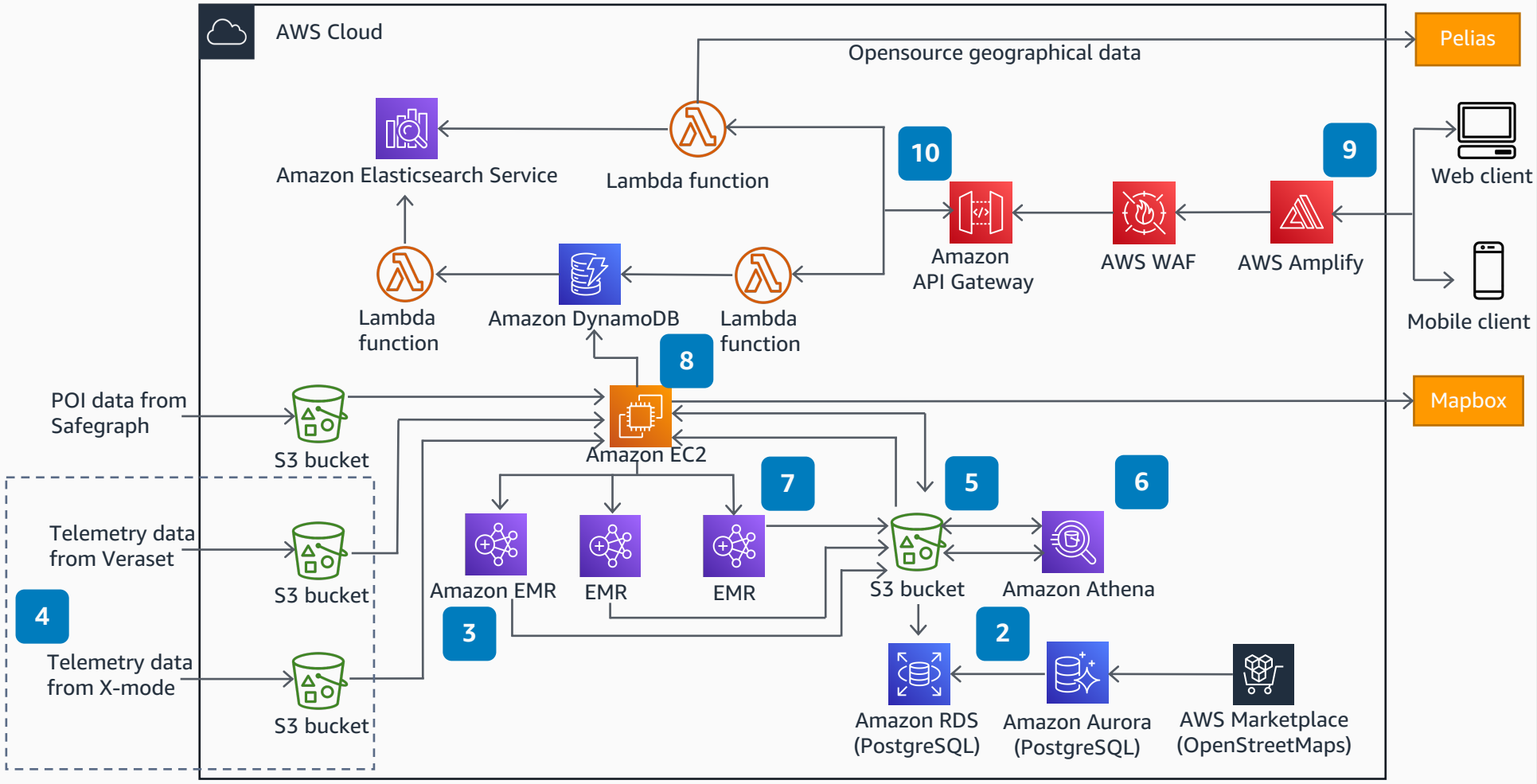
Mobile Application for Social Distancing

Tripadvisor built a social distancing application called Crowdfree that enables users to see people's presence in stores and public spaces. The app leverages serverless architecture, purpose-built databases, and data lakes.



1. Apache Airflow is hosted on an **Amazon Elastic Compute Cloud (Amazon EC2)** instance to orchestrate the entire workflow for this application.
2. Point-of-Interest (POI) data from Safegraph is combined with data from OpenStreetMap (OSM) into **Amazon Relational Database Service (Amazon RDS)** PostgreSQL database.
3. Polygon data from both Safegraph and OSM is indexed by H3 hexes via an **Amazon EMR** process.
4. Telemetry data from Veraset and X-mode is ingested daily and get indexed on H3 hexes.
5. The processed POI and telemetry data get saved in a centralized **Amazon S3** bucket.
6. All the processed data is combined using H3 indexes and geospatial functions provided by **Amazon Athena**.
7. An **EMR** process ingests aggregated data from the **Athena** flow. The **EMR** process creates GeoJSON data and saves it back to the **S3** bucket.
8. The GeoJSON data is loaded in the map layer of Mapbox and **Amazon DynamoDB**.
9. The front-end app is a react application deployed using **AWS Amplify**. The client calls Mapbox for map layers.
10. **Amazon API Gateway** has two **AWS Lambda** functions configured as endpoints: one for search, and other for POI details.

AWS Reference Architecture