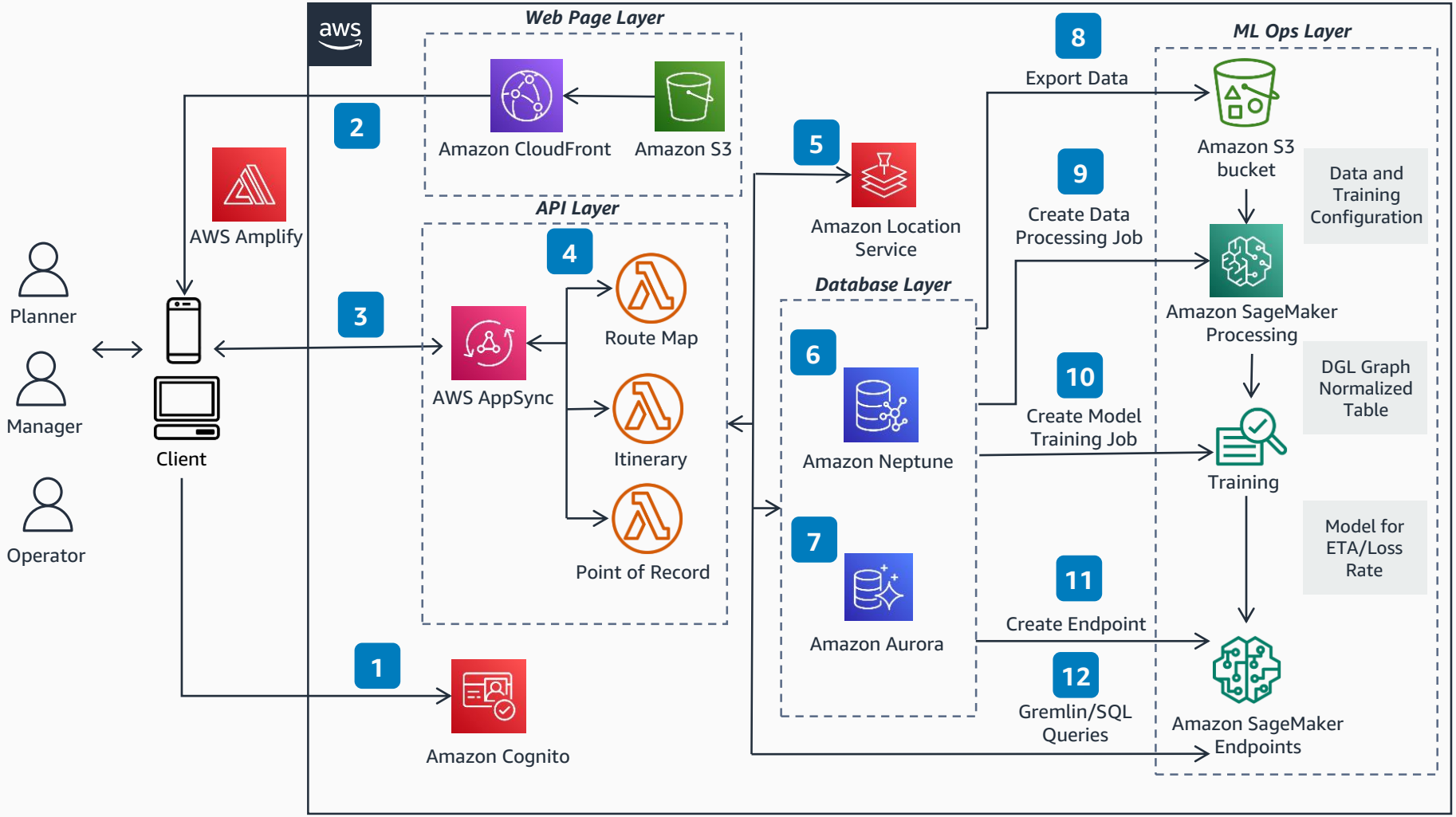
Guidance for On-Time In-Full Compliance on AWS

This ML-based architecture shows an OTIF planning and visibility system that visualizes and predicts the optimal path for delivering products within prescribed delivery windows and at the full quantities ordered by a retailer.



1. Users authenticate with their usernames and passwords, which **Amazon Cognito User Pools** manages.
2. **Amazon Simple Storage Service (Amazon S3)** and **Amazon CloudFront** serve single page application codes to clients.
3. Authenticated clients make API calls to **AWS AppSync**.
4. **AWS Lambda** functions serve the resolvers that provide the planner with a route map of supply chain diagram, the manager with a real-time tracking itinerary of the shipment, and the operator with the point of record interface.
5. **Amazon Location Service** provides maps and location points to visualize the supply chain node's geographical location.
6. **Amazon Neptune** stores the graph data of the supply chain so that each node is a location point. The connection between two nodes is known as an edge, and each edge represents the trip a shipment takes from one point to another.
7. **Amazon Aurora** stores the trip data, itinerary (the set of trips needed to complete the shipment), and the item master list.
8. Export data from **Neptune** and **Aurora** into **Amazon S3** in a CSV format.
9. The exported dataset is preprocessed to prepare it for model training.
10. Train the model to predict estimated time of arrival (ETA) and item loss rate on each trip.
11. Create an inference endpoint in **Amazon SageMaker**.
12. Query the estimated value to the endpoint.

Reviewed for technical accuracy January 19, 2023

AWS Reference Architecture