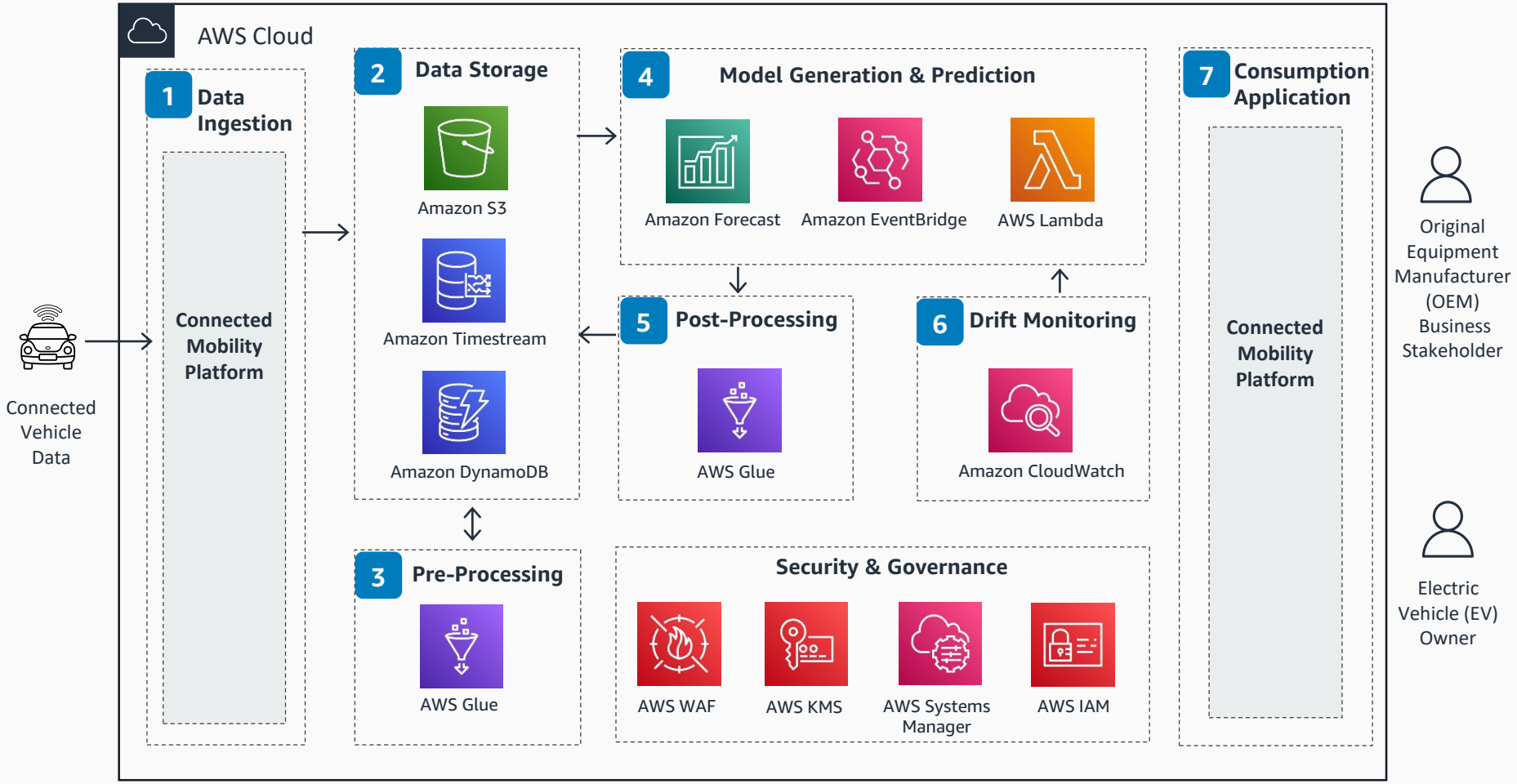
Guidance for Electric Vehicle Battery Health Prediction on AWS

This diagram displays collecting, monitoring, and predicting electric vehicle (EV) battery state of health (SoH) and remaining useful life (RUL) using AWS services.



1. Battery health data is ingested through the Connected Mobility Platform.
2. Streaming data ingested through the Connected Mobility Platform is stored in **Amazon Timestream** for near real-time monitoring. **Amazon Simple Storage Service** (Amazon S3) is used to store historical battery data. **Amazon DynamoDB** stores the state of each phase of the machine learning (ML) pipeline, including pre-processing, model generation and prediction, post-processing, and drift monitoring.
3. When new data becomes available, **AWS Lambda** is initiated to start a pre-processing job in **AWS Glue** using the uploaded processing plugin script to transform battery health data into the desired format.
4. Processed datasets are imported into **Amazon Forecast**, which uses AutoML to automatically choose the most optimal data processing and ML algorithm to build. It then trains and makes predictions on battery state of health (SoH) and remaining useful life (RUL).
5. Predictions made using **Forecast** are exported into **Amazon S3** after getting processed using **AWS Glue**. This data is used to serve data through a web interface for Original Equipment Manufacturer (OEM) and the vehicle dashboard for connected vehicles.
6. Exported forecasts in **Amazon S3** are also used to monitor drift. You can set a drift threshold, for example 10%, above which the forecast pipeline gets triggered to retrain the model.
7. You can view battery health status and predictions through the Connected Mobility Platform.

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AWS Reference Architecture