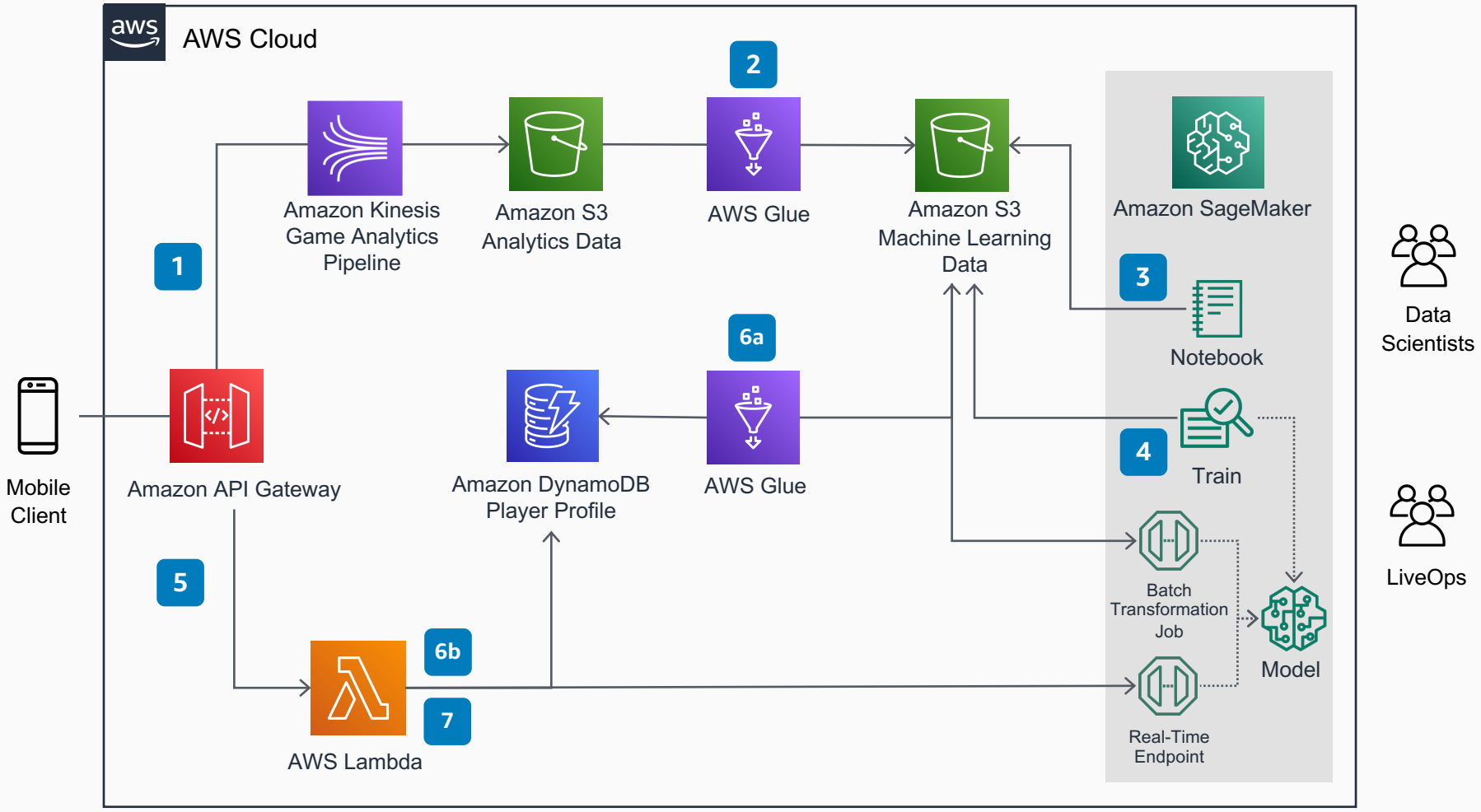
Player Churn Prediction and Retention

Use machine learning to predict player churn and trigger retention actions

Use **Amazon SageMaker** to build, train, and deploy a churn prediction model for batch or real-time inference.



1. The mobile client sends player events via the Game Analytics Pipeline to an **Amazon Simple Storage Service (Amazon S3)** bucket.
2. **AWS Glue** transforms and marks players as ACTIVE, INACTIVE, or CHURN for data scientists.
3. Data scientists prepare player data, test algorithms, and build a model with 10% of the dataset.
4. Data scientists launch model training on 80% of the dataset and store the model in **Amazon S3**. The remaining 20% are used to test the model accuracy.
5. The mobile client asks which in-game player retention action should be triggered (display promotional offer, give coins, give items, and so on).

6a. **Batch Inference:**
A periodic **AWS Glue** job triggers a batch transformation job on the entire dataset, and copies the results in a player profile table in **Amazon DynamoDB**.

6b. The **AWS Lambda** function checks the player profile churn prediction and chooses the most appropriate retention action.

7. **Real-Time Inference:**
The **Lambda** function checks the player profile, and evaluates churn probability on the fly from the **Amazon SageMaker** endpoint to choose the most appropriate retention action to display.

AWS Reference Architecture