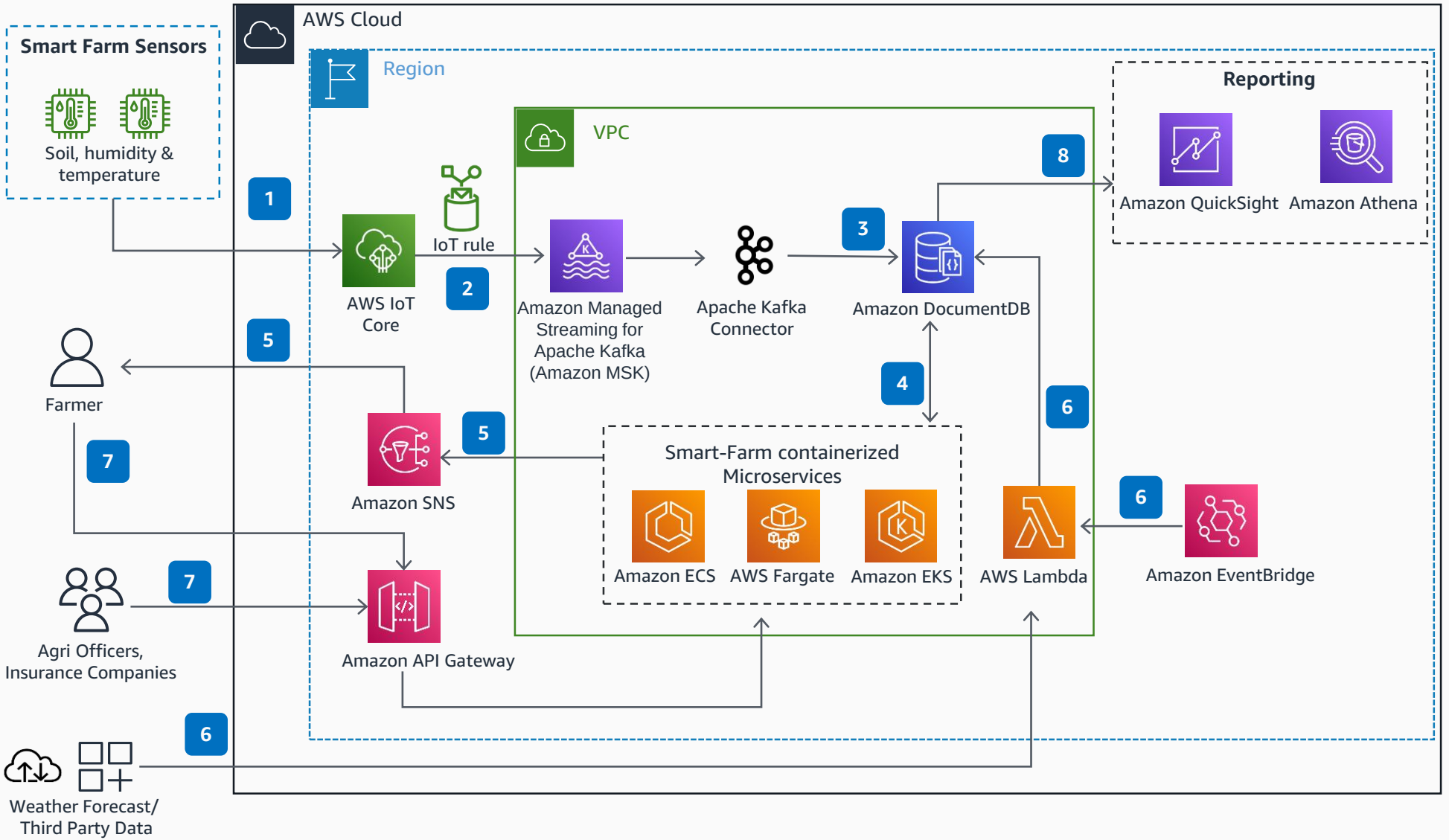
Guidance for Building an Agricultural Sensor Network using IoT and Amazon DocumentDB

Smart and sustainable farming technique to enhance agricultural productivity



1. Sensors on the farm sends JSON data to **AWS IoT Core.**
2. AWS IoT rule forwards data to **Amazon Managed Streaming for Apache Kafka** (Amazon MSK) based on rule conditions that are setup.
3. JSON data from the sensors is stored in **Amazon DocumentDB (with MongoDB compatibility)** leveraging **Amazon MSK** serverless and containerized Kafka connector that is setup on **AWS Fargate.**
4. Smart farms containerized microservices process the sensor and third-party data received, and generate recommendations to farmers. Smart farm's microservices can run on either **Amazon Elastic Container Service** (Amazon ECS), **Fargate**, or Amazon Elastic Kubernetes Service (Amazon EKS)“
5. Farmers would be notified through **Amazon Simple Notification Service** (Amazon SNS).
6. **Amazon EventBridge** triggers **AWS Lambda** function periodically to collect data such as weather updates and soil tests results from third-parties.
7. Agriculture officers, insurance companies, or farmers can access smart farm application for additional information using **Amazon API Gateway** (this is an optional user action).
8. Smart Farm’s organization admins can generate reports or perform on-demand analysis on the data stored in **Amazon DocumentDB** using **Amazon Athena**, **Amazon QuickSight**, or any other reporting (this is an optional user action).

AWS Reference Architecture