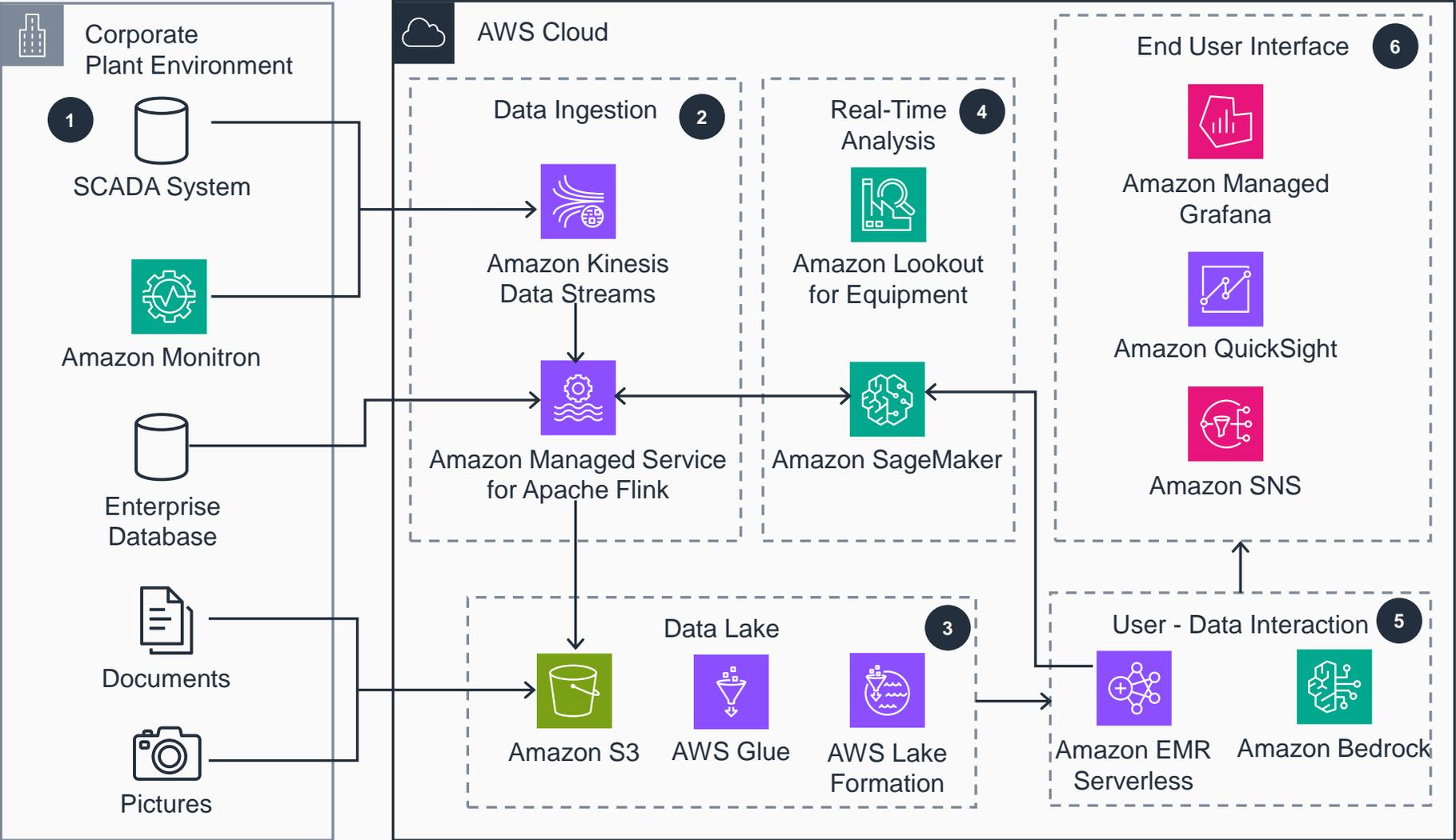# Guidance for Downstream Equipment Health and Maintenance on AWS

The architecture diagram illustrates a framework that offers near real-time alerts pertaining to equipment health issues and provide recommendations for required maintenance activities.

Corporate Plant Environment

1. SCADA System
Amazon Monitron
Enterprise Database
Documents
Pictures

AWS Cloud

Data Ingestion 2
Amazon Kinesis Data Streams
Amazon Managed Service for Apache Flink

Real-Time Analysis 4
Amazon Lookout for Equipment
Amazon SageMaker

End User Interface 6
Amazon Managed Grafana
Amazon QuickSight
Amazon SNS

Data Lake 3
Amazon S3
AWS Glue
AWS Lake Formation

User - Data Interaction 5
Amazon EMR Serverless
Amazon Bedrock

1. Unify unobstructed access to operational technology (OT) data by putting live measurements from SCADA systems and **Amazon Monitron** into **Amazon Kinesis Data Streams**.

2. Hydrate your data lake using **Amazon Managed Service for Apache Flink**. Consume records from **Kinesis Data Streams** and change data capture (CDC) streams from database engines. Write to popular data lake frameworks (such as HUDI and Delta).

3. Simplify data lake management with three approaches. First, persist data with **Amazon Simple Storage Service (Amazon S3).** Next, add column- and row-level security to the **AWS Lake Formation**. Last, make information discoverable with **AWS Glue**.

4. Create real-time insights with ready-to-use algorithms in **Amazon Lookout for Equipment**, and deploy custom machine learning models with **Amazon SageMaker**.

5. Provide technicians with repair instructions from equipment manuals using **Amazon Bedrock**. Train machine learning models on **Amazon EMR** and package them for real-time inference.

6. Display near real-time dashboards to users with **Amazon Managed Grafana** for timeseries data and **Amazon QuickSight** for business intelligence. Notify users about equipment health issues using **Amazon Simple Notification Service (Amazon SNS)**.

AWS Reference Architecture