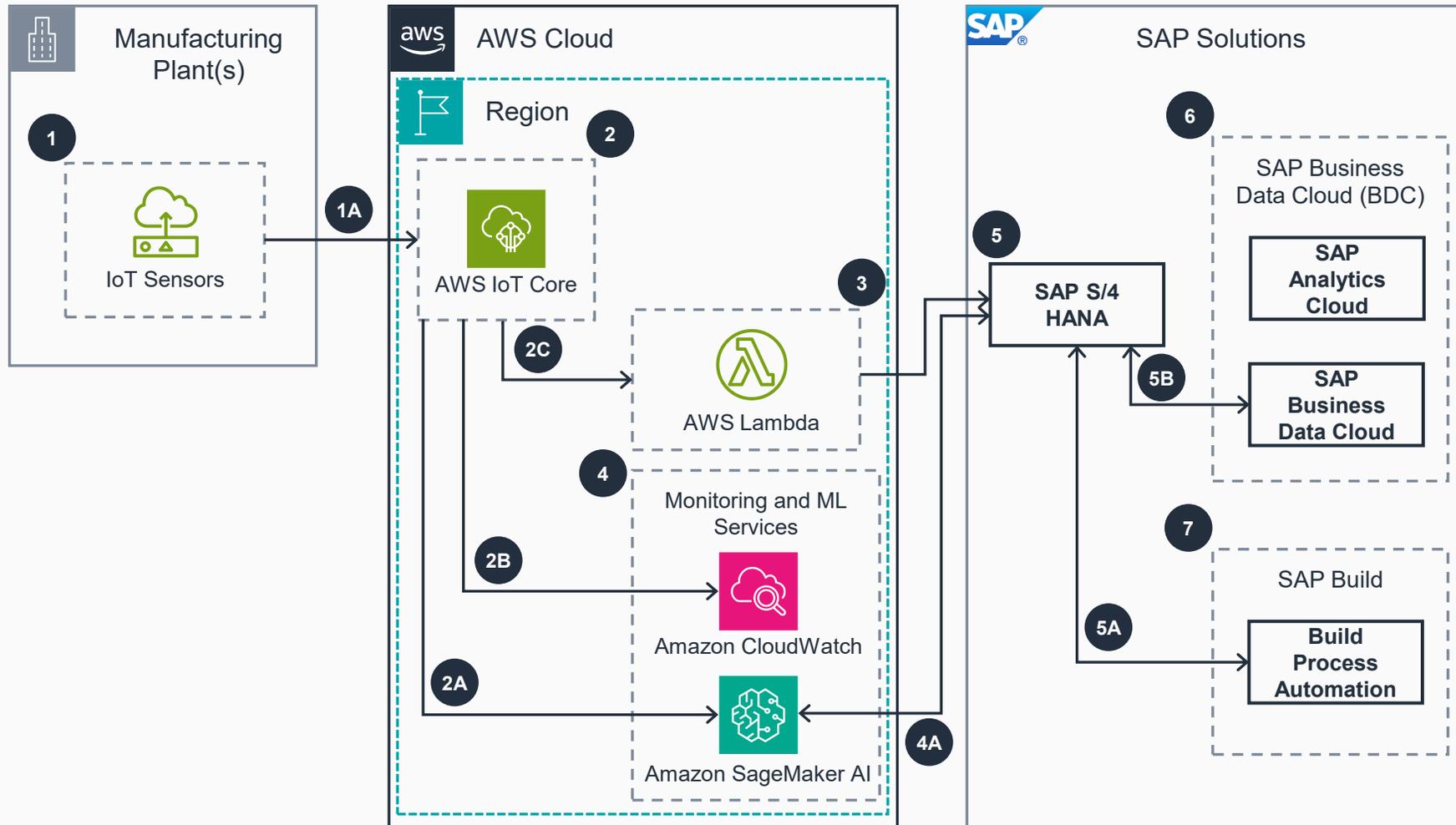# Guidance for Predictive Maintenance with SAP using AWS IoT

This architecture diagram shows how to build a predictive maintenance solution on AWS that processes industrial sensor data and automatically creates maintenance notifications in SAP S/4HANA.

Manufacturing Plant(s)

1 — IoT Sensors

AWS Cloud

Region

2 — AWS IoT Core

2C

AWS Lambda — 3

4 — Monitoring and ML Services

2B — Amazon CloudWatch

2A — Amazon SageMaker AI

4A

SAP Solutions

5 — SAP S/4 HANA

6 — SAP Business Data Cloud (BDC)

SAP Analytics Cloud

5B — SAP Business Data Cloud

7 — SAP Build

5A — Build Process Automation

1. IoT Sensors generate real-time telemetry (e.g., temperature, vibration) to monitor equipment health.

1A. Sensor data is securely transmitted to **AWS IoT Core** via MQTT/HTTP.

2. **AWS IoT Core** is central service for securely ingesting and routing device data using rules.

2A. AWS IoT Core sends selected telemetry for real-time inference using ML models in **Amazon SageMaker AI**.

2B. **Amazon CloudWatch** monitors message flows and logs system health metrics using **AWS IoT Core** data.

2C. Rules trigger **AWS Lambda** functions to process and act on incoming telemetry from **AWS IoT Core**.

3. AWS Lambda filters and transforms data for downstream systems. AWS Lambda sends alerts or enriched data to SAP S/4HANA via OData API, creating maintenance notifications.

4. **Amazon CloudWatch** observes ML pipelines; **Amazon SageMaker AI** predicts failures using trained models.

4A. SAP S/4HANA sends historical data for training to **Amazon SageMaker AI**; predictions are sent back to enrich asset records.

5. SAP S/4HANA manages assets and triggers maintenance based on incoming alerts or predictions.

5A. SAP S/4HANA triggers workflows for maintenance orders, approvals, or technician alerts.

5B. SAP S/4HANA shares data with SAP BDC for integration, harmonization, and analysis.

6. SAP BDC integrates SAP S/4HANA data; SAP Analytics Cloud visualizes KPIs and predictions.

7. SAP Build Process Automation is a low-code tool to automate actions based on SAP S/4HANA events.

AWS Reference Architecture