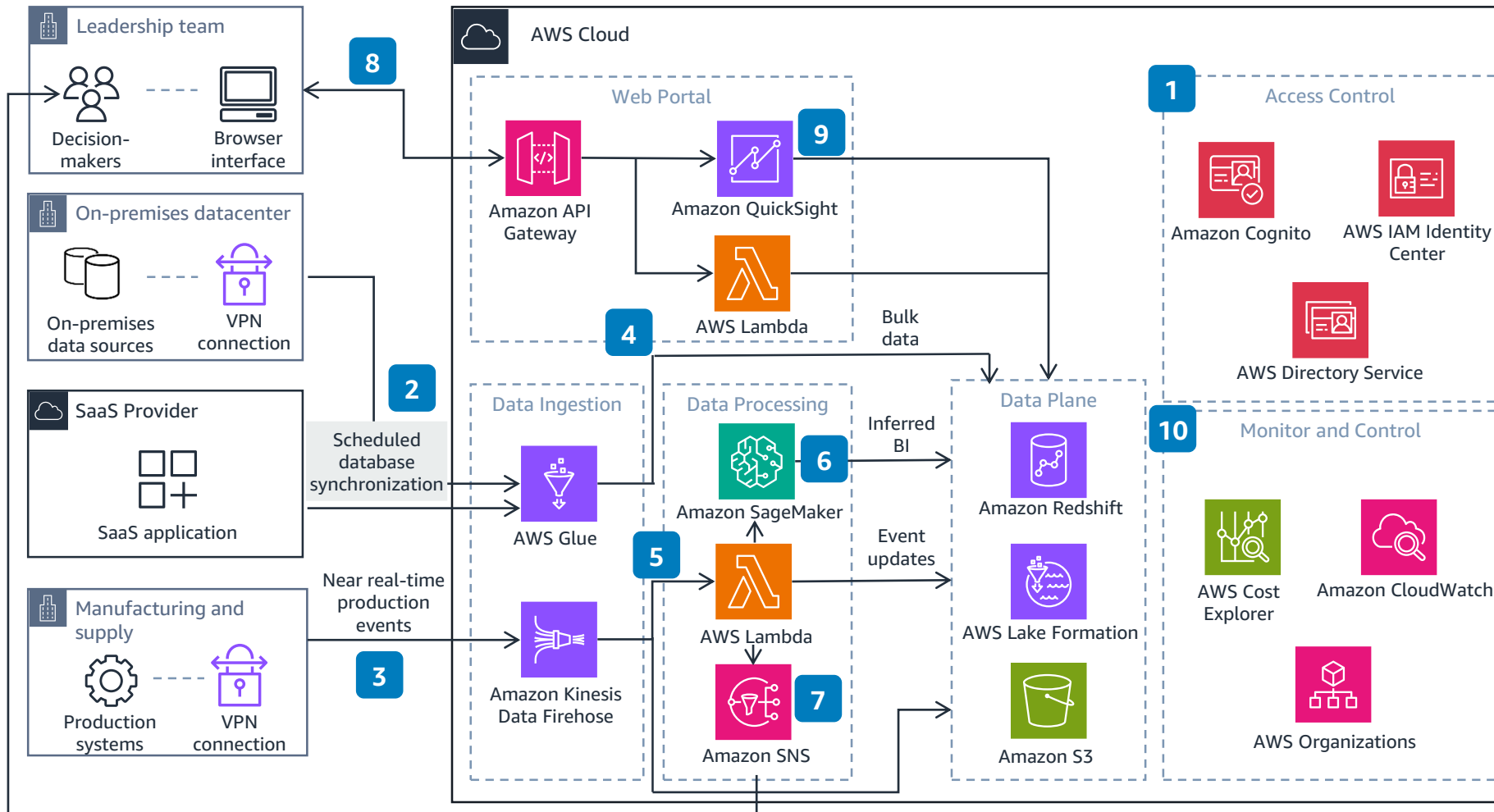# Guidance for Factory Visibility and Decision Prediction on AWS

This architecture shows an integrated dashboard that can help production leadership identify bottlenecks and make data-driven decisions.

1 Authorized users authenticate with single sign-on (SSO) through **Amazon Cognito** and **AWS Directory Service**.

2 Enterprise Resource Planning (ERP), Material Requirement Planning (MRP), and Human Resources (HR) systems synchronize to cloud storage nightly using **AWS Glue**.

3 **Amazon Kinesis Data Firehose** streams manufacturing and procurement events in near real time.

4 AWS Glue ingests all data directly into managed, serverless data stores, including **Amazon Redshift Serverless** and **AWS Lake Formation**.

5 Streaming manufacturing and procurement events invoke processes in **AWS Lambda** to update data with near real-time production status.

6 Predict completion, cost, scrap, rework, and more using past and current production data with ML inference in **Amazon SageMaker** for "what-if" scenarios.

7 Initiate user notifications for immediate action through email and SMS using **Amazon Simple Notification Service (Amazon SNS).**

8 Production leaders access near real-time intelligence using a secure web portal with **Amazon API Gateway**, which provides a RESTful API for creating dynamic views.

9 Create advanced, low-code/no-code graphical views and alerts in the web portal from the data warehouse using **Amazon QuickSight** and **Lambda**.

10 Administer consistent security and cost controls across multiple accounts through **AWS Organizations**. Monitor cloud activity and costs through **Amazon CloudWatch** and **AWS Cost Explorer**.

AWS Reference Architecture