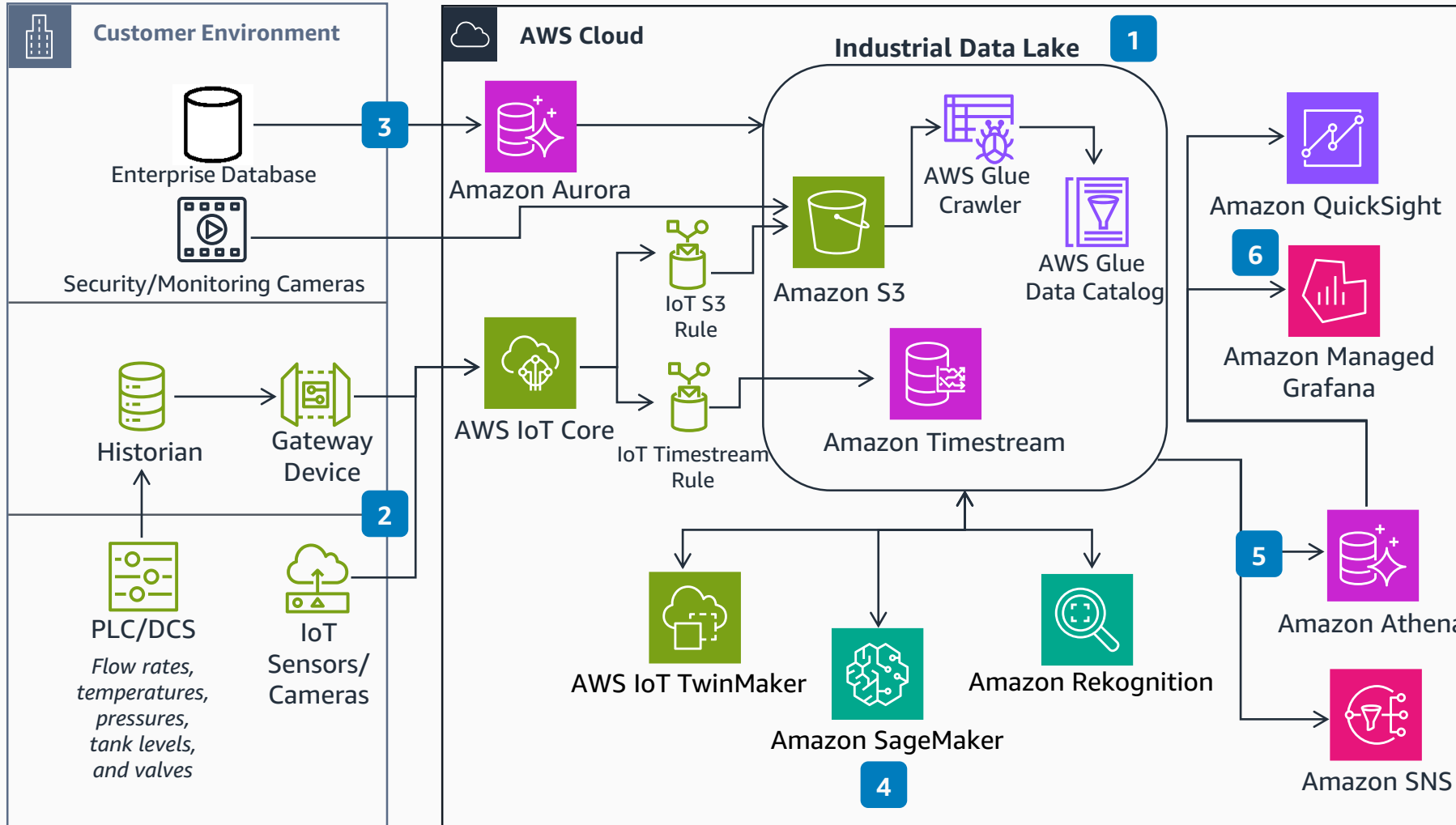


Guidance for Downstream Process Optimization on AWS

This Guidance is designed to improve the operations of downstream industrial facilities. It is built on a foundational data architecture, leveraged by AWS managed services, to provide insights, driven by artificial intelligence, for engineers and operators.



- 1 This architecture diagram leverages an industrial data lake to derive efficiency recommendations and insights into industrial process optimization. Storage in **Amazon Simple Storage Service (Amazon S3)**, **Amazon Aurora**, and **Amazon Timestream** provide structured access to data with **Amazon Athena** for relationship contextualization.
- 2 Sensor data from the facility, including Programmable Logic Controller (PLC) and Distributed Control System (DCS), securely flows into **AWS IoT Core** from process control or information networks. Telemetry of near real-time operations is available in **Amazon S3** or **Timestream**.
- 3 Enterprise IT systems contain valuable operational data, including process design, specifications, camera feeds, and product quality data. Replicas and select views are stored in **Aurora**, or the industrial data lake, or both.
- 4 Machine learning (ML) in **Amazon SageMaker Studio**, and artificial intelligence (AI) service **Amazon Rekognition**, make inferences based on models using the provided input data. Product quality or throughput goals, energy efficiency ratings, and response actions are example outputs of the AWS AI/ML managed services.
- 5 Results from process optimization models and analytics can be queried and viewed through **Athena**. These results include suggested actions or events of interest, notifying operators with **Amazon Simple Notification Service (Amazon SNS)**.
- 6 Visualization and reporting can be achieved with **Amazon QuickSight**, **Amazon Managed Grafana**, or partner business intelligence (BI) applications. In addition, **SageMaker** and **AWS IoT TwinMaker** provide visualizations.