# AWS re:Invent

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IOT210

# What's new with AWS IoT SiteWise

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# About this session

You will learn what is AWS IoT SiteWise

You will look at how customers use AWS IoT SiteWise

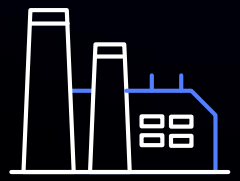
You will hear about the most recent releases for AWS IoT SiteWise

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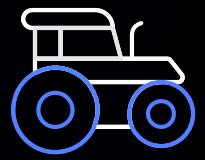
# Industrial digital transformation

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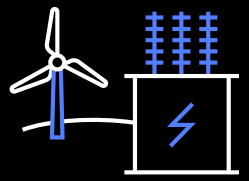
# Industrial digital transformation is increasing across asset-heavy industries



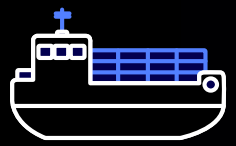
Discrete and process manufacturing



Agriculture



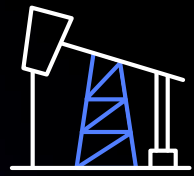
Power and utilities, renewables



Transportation and logistics



Mining



Energy (oil and gas)

aws

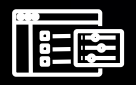
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# Industrial customers' challenges



## Data access

Integrate data from new and legacy equipment, using different protocols and drivers



## Data management

Organize large amounts of unstructured, disparate machine data



## Scale

Manage assets, device fleets, and data across sites



## Real-time decision making

Operate at the edge with minimal tolerance for latency



## Security

Keep operational assets and data secure

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# AWS IoT SiteWise primer

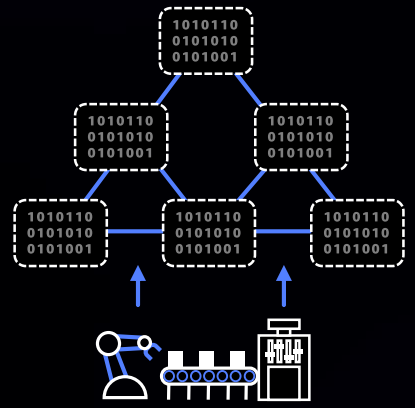
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# AWS IoT SiteWise

AWS IoT SiteWise collects data from the plant floor with a local gateway, structures and labels that data, and generates real-time KPIs and metrics to make better data-driven decisions



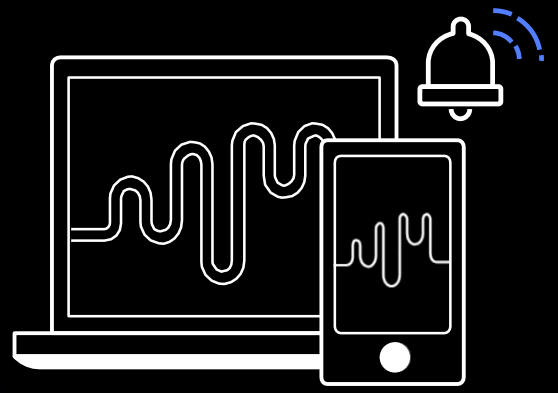
Ingest equipment data into AWS in minutes and process data locally



Structure data with asset models to represent industrial operations



Store data and compute performance metrics for your equipment and processes with asset models



Create and share dashboards to visualize live and historical equipment data; set up alarms to alert operations teams

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# Ingest data



## Ingest all data streams *New!*

Start data ingestion upon connecting to AWS IoT SiteWise

## Support multiple protocols

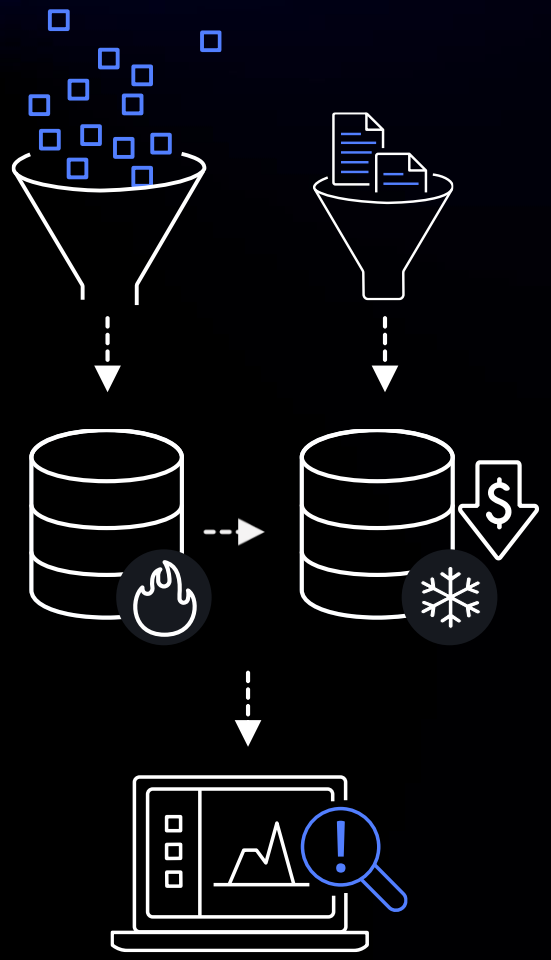
Supports MQTT (AWS IoT Core), OPC-UA, Modbus and Ethernet/IP protocols

## Collect data from devices and historians

Collect data from devices and historians across all sites

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# Store and process data



## Time-series data store

Scalable, performant, and managed time-series data store

## Export data to Amazon S3 *New!*

Ability to export data to your Amazon S3 for cost savings

## Query APIs

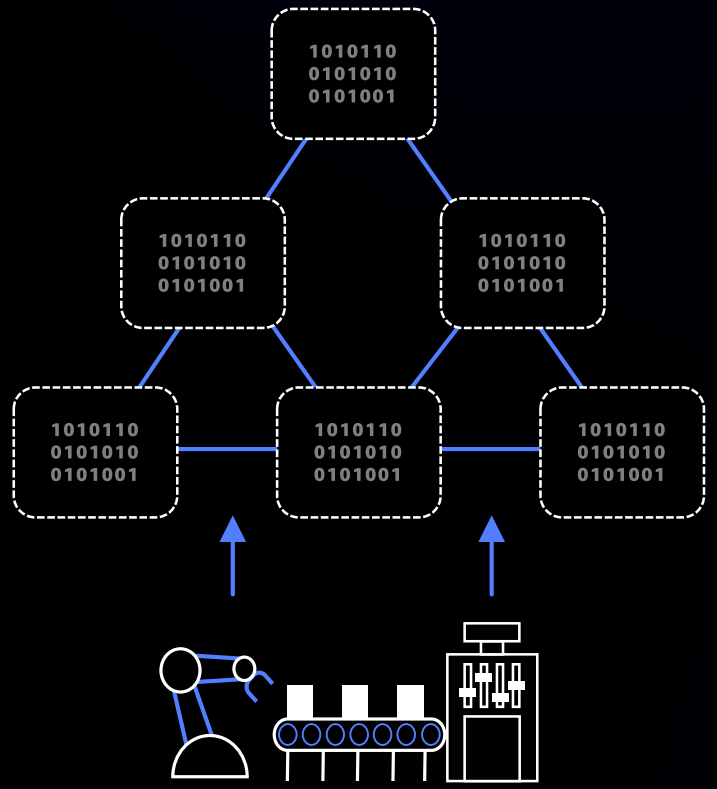
APIs to access historical values for properties and metrics for specific time range

## Metrics and transform computation

Formula-based and built-in functions for metrics and transform

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# Contextualize industrial data




## Model equipment

Create asset models with measurements and assign assets to asset model

## Model production site

Define asset model hierarchies and asset associations

## Define formula-based metrics

Define formula-based metrics to customize KPIs calculation

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# Yara International

## Vision

Yara is building a next generation Digital Production Platform (DPP). The overall goal is to bring new actionable insights from production data to employees and partners in a standardized, controlled, and secure way.

## Solution

Yara uses AWS IoT SiteWise to model their production sites, collect, and store production data. This enables data-driven products and analytics to run on top of the platform.

## Benefits

AWS IoT SiteWise enables Yara to ingest production data to the cloud and enable analytics to predict product quality and composition, improve balancing of the site utilities, and detect when machines need repair or maintenance to keep production at optimal efficiency levels.

"Our ambition is to utilize recent technological advancements in sensors, connectivity, cloud computing and machine learning to increase uptime, improve performance and reduce waste in the value chain."

Kyrre Tømmerberg
Director Technology, Digital Production
Yara International

**Industry:** Agriculture

**Headquarters:** Norway

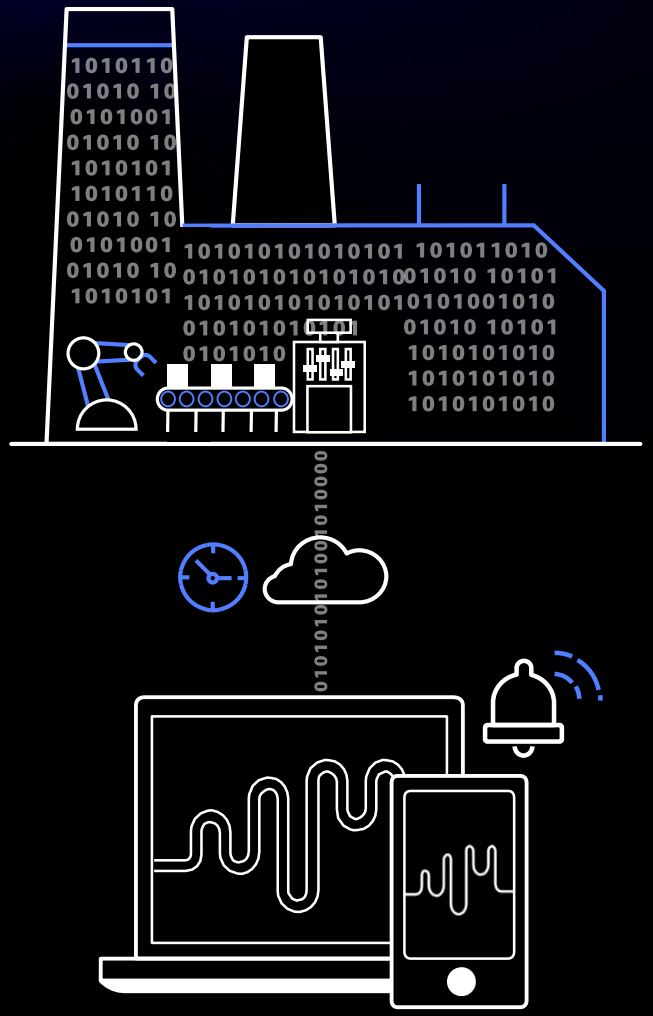
**Website:** www.yara.com

**About Yara International**

Founded in 1905 to solve the emerging famine in Europe, Yara has established a unique position as the industry's only global crop nutrition company.

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# Visualize data



## AWS IoT SiteWise Monitor

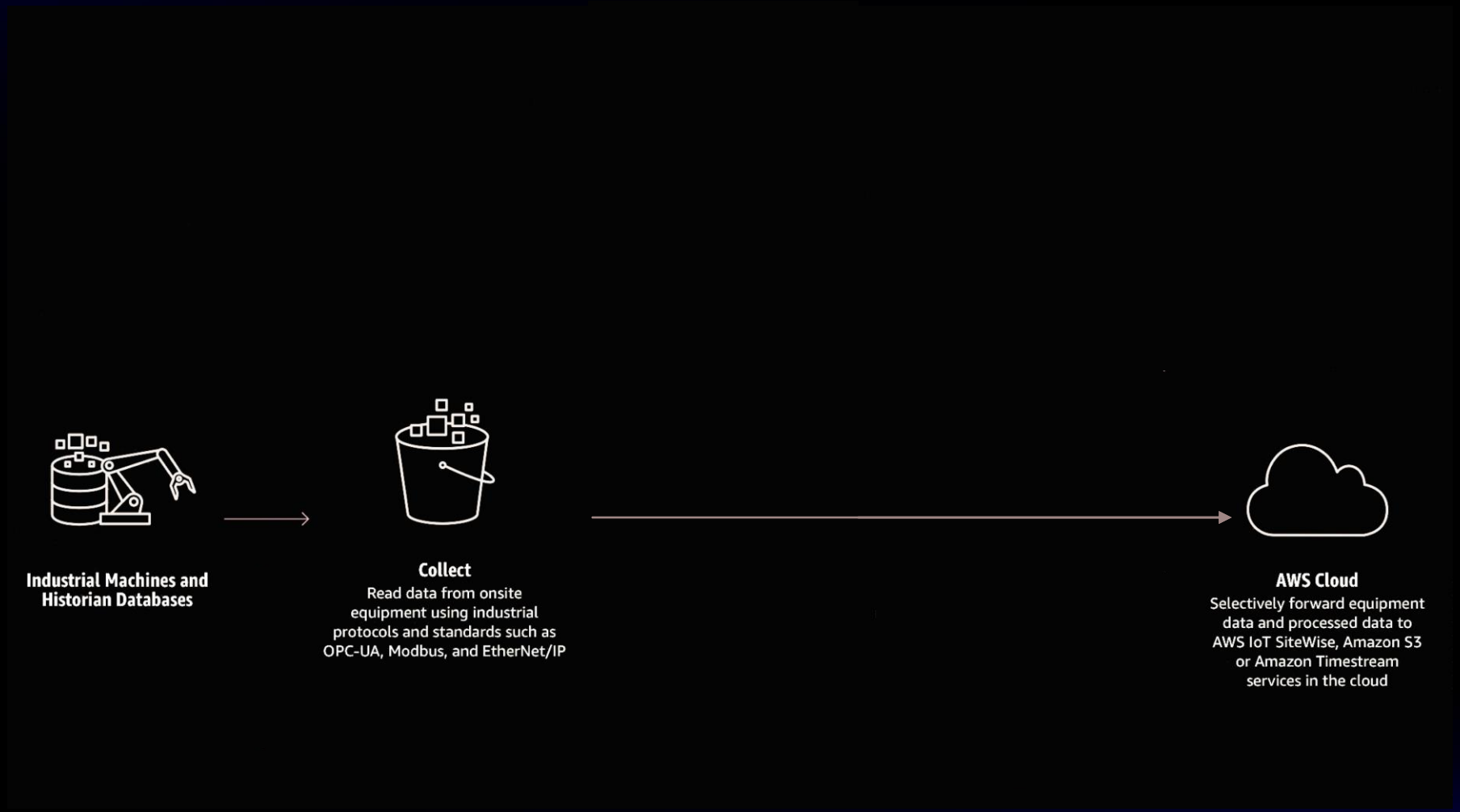
A managed web application for visualizing and interacting with AWS IoT SiteWise data

## Grafana plugin

Visualize your data in Grafana using AWS IoT SiteWise Grafana plugin

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# AWS IoT SiteWise Edge




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# Coca-Cola İçecek improves productivity and environmental sustainability

## Vision

As part of its data-centric technology vision, using Digital Twins, CCI decided to build a new operating system model for Supply Chain, to create a continuous improvement engine, to enable sustainability, efficiency, and quality for CCI's assets.

## Solution

CCI is developing a digital twin platform to enable intelligent manufacturing by optimizing production processes and line utilization through industrial data-driven monitoring, advanced analytics, and AI.

## Benefits

- Saved 20% on energy annually
- Saved 9% on water annually
- Optimized clean-in-place process time and cost savings estimated at 34 days of process time annually

"We knew this was going to be a comprehensive solution that involved multiple aspects, such as IoT data modeling, processing, and performance. AWS offered a flexible suite of services and provided the level of support we needed to build a scalable and configurable solution."

**Elif Ege**
Digital Twin Product Manager, Coca-Cola İçecek

CCI

**Industry:** Consumer goods

**Headquarters:** Turkey

**Website:** www.cci.com.tr

**About CCI**

Coca-Cola İçecek is one of the key bottlers in the Coca-Cola system. Based in Istanbul, Turkey, the company produces and distributes beverages across Turkey, Pakistan, central Asia, and the Middle East, serving more than 400 million consumers.

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# Ingest data & model assets



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# Ingest data

## Start data ingestion upon connecting assets

Customers want to start ingesting data into the cloud with minimal effort and short lead time

## Asset modeling iteration

Customers want support to iterate asset modeling and asset association

## One step to data visualize

Customers want instant feedback on their data and to reduce the steps to visualize their data

## Ingest all data streams

AWS IoT SiteWise will ingest all time series data sent through AWS IoT SiteWise Edge, AWS IoT Core, and AWS IoT SiteWise batch PUT API

## Flexible asset modeling and asset association

Customers can update asset model and asset association with no data loss

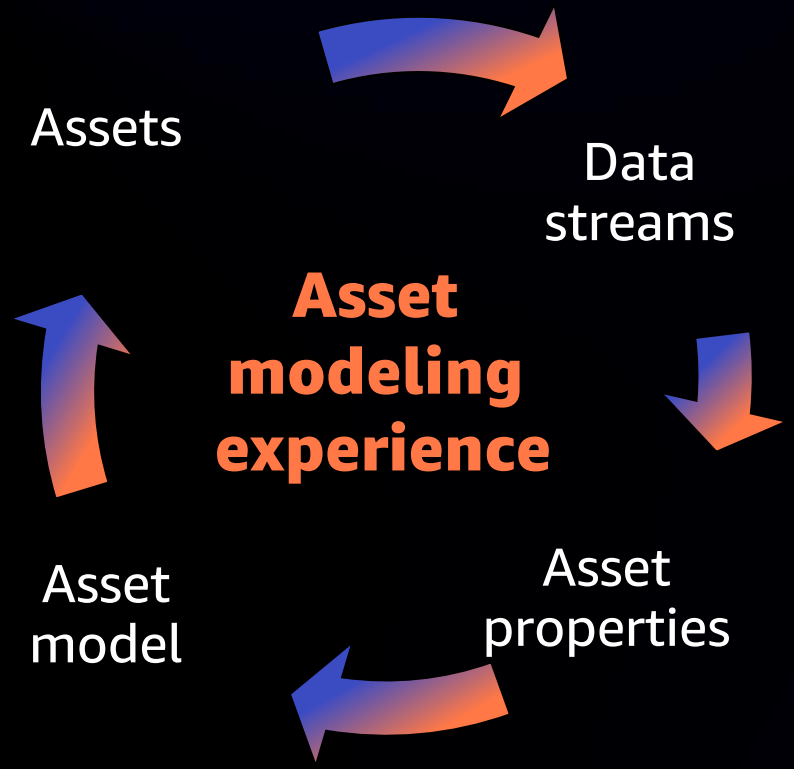
## Instant feedback on data streams

Data streams can be visualized inside AWS IoT SiteWise console for instant feedback

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# Asset modeling



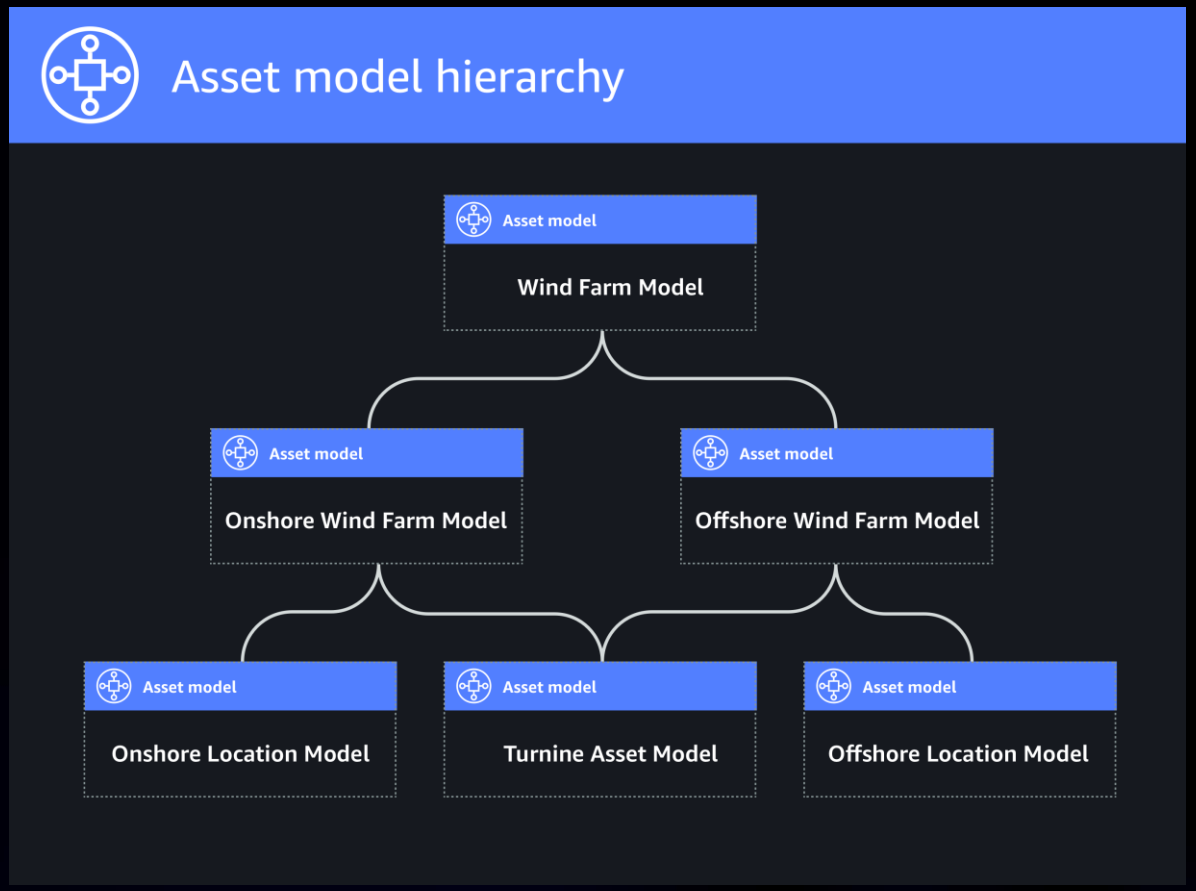

- Assets generate data streams ingested
- Data streams assigned to asset property
- One or more properties compose asset model representing a type of asset
- Assets associate with asset model to provide context for data streams

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# Asset model hierarchy

Scalable asset model hierarchies to create full digital representation of a  production site

Use the same asset model across hierarchies and reduce the number of asset models

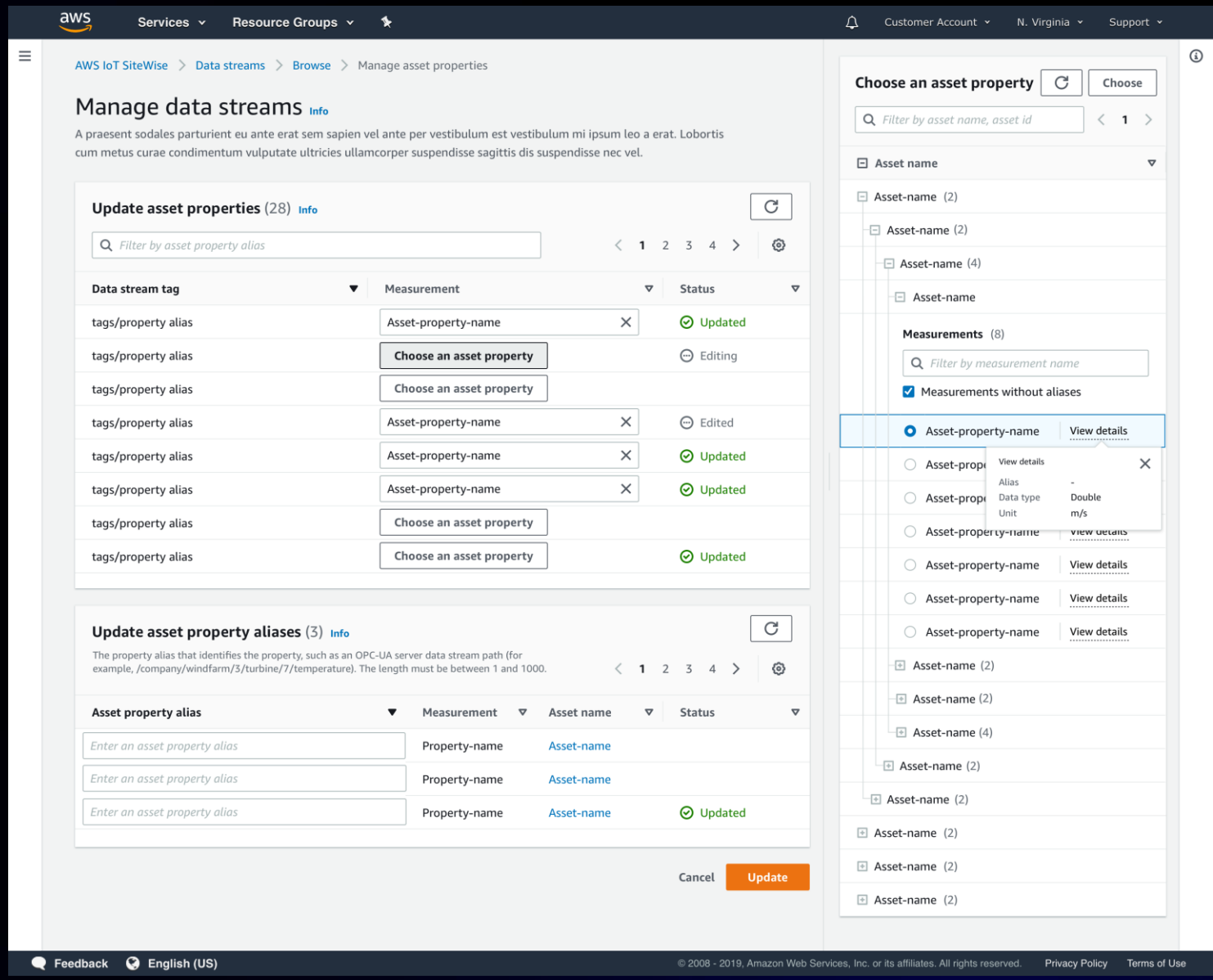



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# Flexible asset assignment

Modify data stream and asset association without data loss

Associate asset property and data stream in one screen



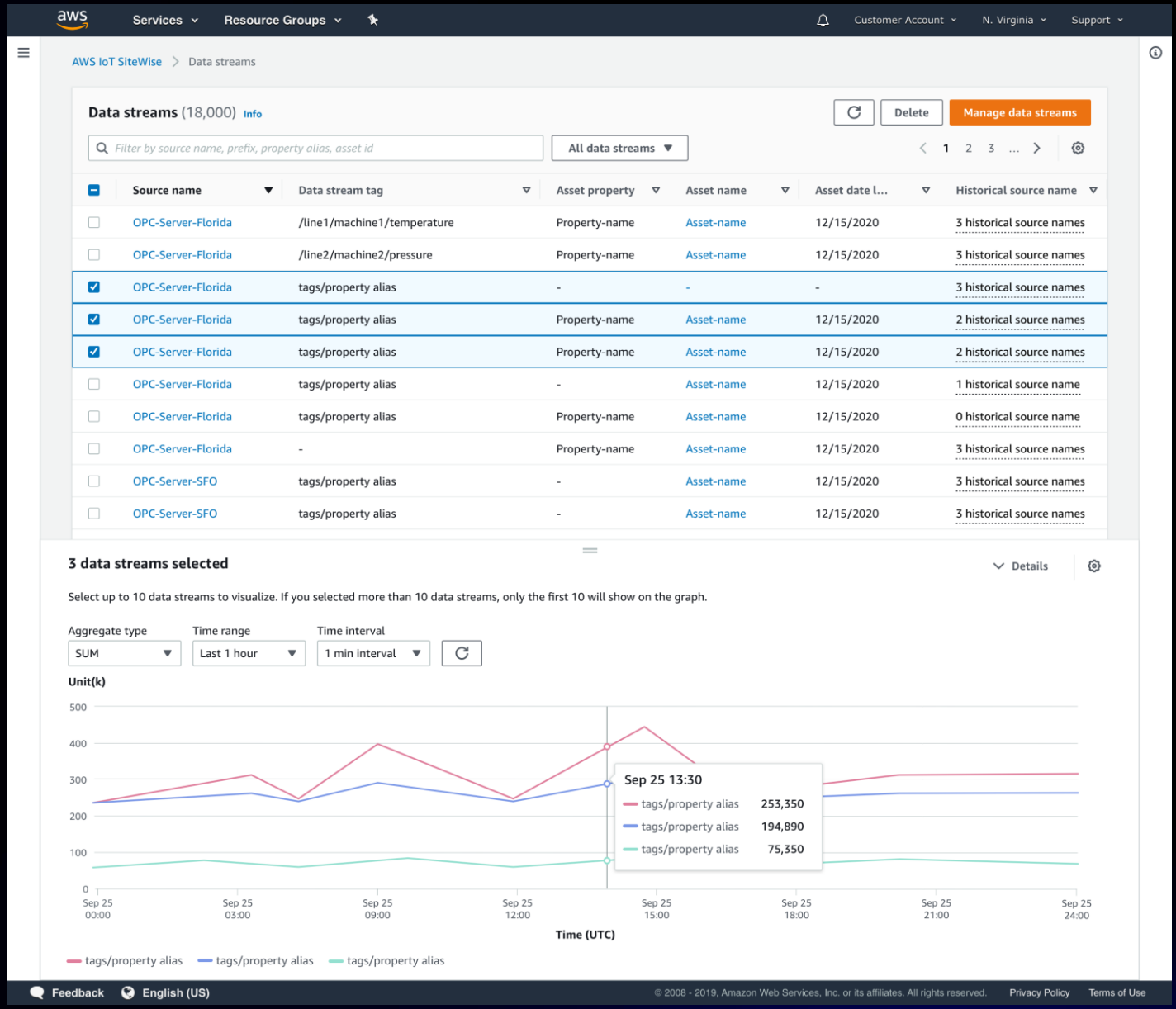

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# Manage data streams

Manage data streams at scale

Filter data stream alias with prefix

Instant feedback on data streams




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# AWS IoT SiteWise demo

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# AWS IoT SiteWise Storage

## Support for hot and cold storage tiers



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# Highly requested features

## Export to Amazon S3

Reduce cost of storage by using Amazon S3 as the long-term storage for COLD data

## Build your industrial data lake

Seamless integration of AWS IoT SiteWise data with your industrial data lake, and enable AI/ML, BI, advanced analytics, and more

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# AWS IoT SiteWise hot and cold storage tiers

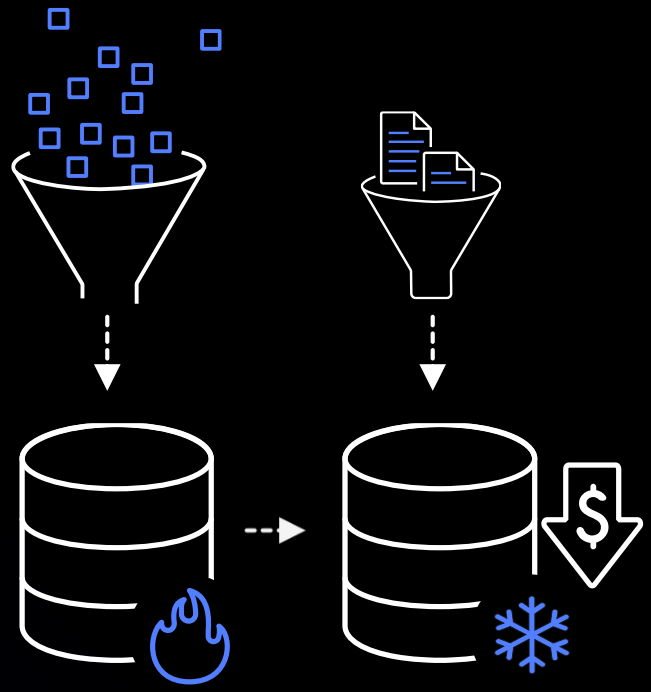
AWS IoT SiteWise now has two storage tiers, a hot tier and a cold tier

## Hot Tier

- Lowest write to read latency for most frequently used data
- Performant for real-time monitoring and visualization

## Cold Tier

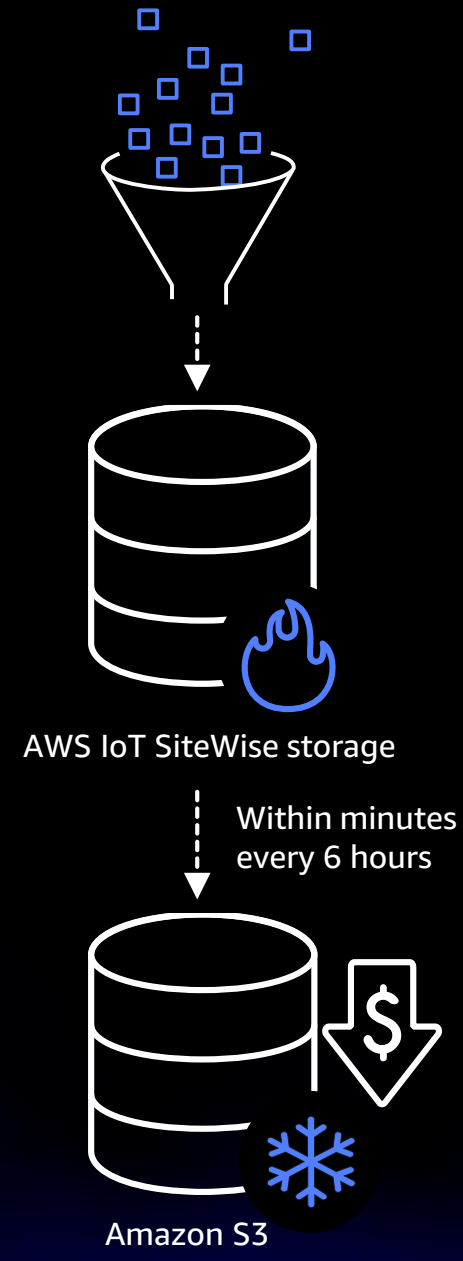
- Lowest cost to store historic data
- Optimized for interactive and ML applications
- In a customer owned Amazon S3 bucket




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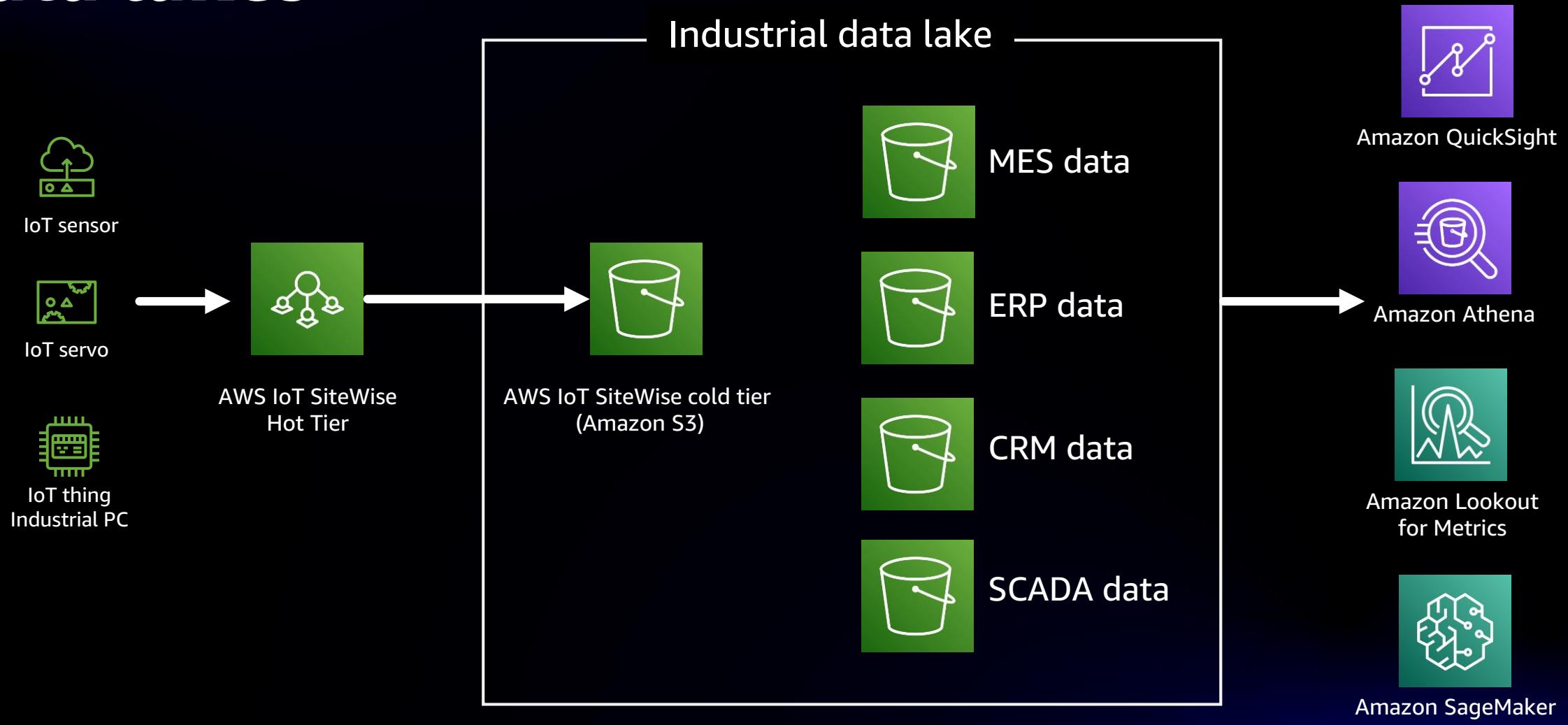
# AWS IoT SiteWise continuously syncs data to Amazon S3

- Sensor data ingested to AWS IoT SiteWise is stored in HOT tier first
- AWS IoT SiteWise computes customer defined metrics, transforms, and the most common aggregates on data, and stores them in the HOT tier
- The time series data from 2 steps above are moved to COLD tier every 6 hours
- Customers define retention period for data stored in HOT tier to reduce cost of HOT tier storage
- A complete virtual representation of your factory floor (asset model data and asset data) is kept in the HOT tier, and also moved to the COLD tier in near real time




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# AWS IoT SiteWise integration to industrial data lakes




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# Thank you!


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