cognizant | **aws**

From siloes to synergy– connected by design

Unifying industrial data with Cognizant's next-gen Unified Name Space (UNS) framework fully scalable on AWS cloud

As manufacturers modernize their operations, Cognizant's Unified Name Space (UNS) solution, powered by AWS, delivers a centralized, standardized framework to harmonize data across all layers of the enterprise.

From plant floors to cloud platforms, the UNS data structure aggregates and organizes information across the enterprise network. It serves as a universal point of data reference, breaking down silos and ensuring seamless data interchange and interpretation between all connected devices and applications.

By enabling real-time data integration, contextualization, and standardization, manufacturers can unlock new levels of efficiency, visibility, and insight—paving the way for scalable industry 4.0 transformation.

Solving today's manufacturing challenges

1 Data silos
Disparate systems prevent seamless communication and limit real-time insights

2 Operational inefficiencies
Lack of real-time data visibility impedes speedy decision-making and intensifies operational inefficiencies

3 Complex data integration
Simplifying the integration of diverse data sources and systems into one data source

Key highlights

Standardized data structure
A unified architecture for aggregating data from diverse sources across operations

Real-time contextualization
Provides operators, engineers, and leaders with a live view of production environments

Scalable & secure
Built in AWS performance, scalability, and enterprise-grade security

Integration agility
Supports interoperability with industrial systems (e.g., SCADA, PLCs, MES, ERP) and cloud applications
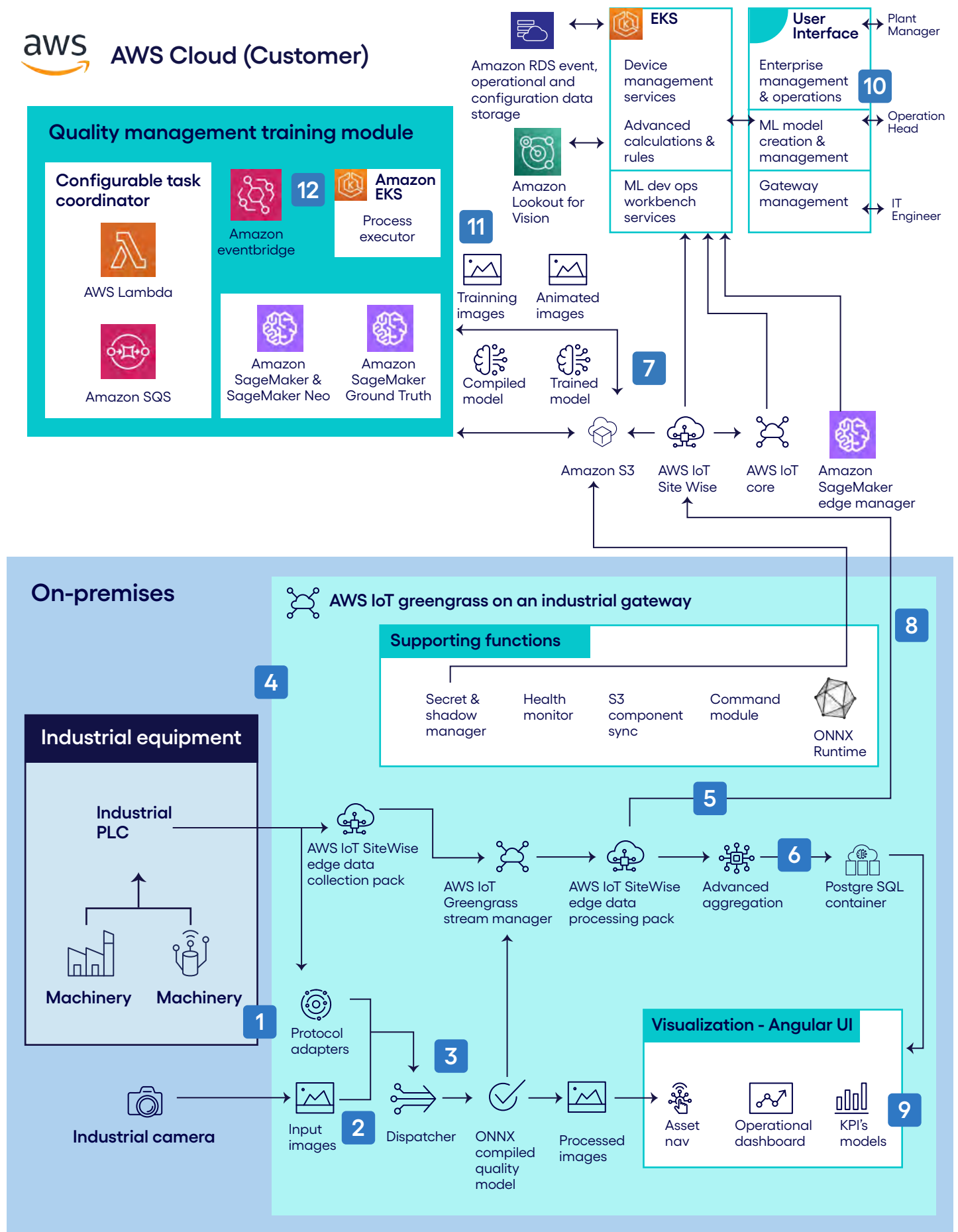
Data-driven outcomes
Empowers analytics, AI/ML models, and predictive insights across the value chain

Foundation for digital twins & industry 5.0
Enables advanced use cases by delivering reliable, structured operational data

Solution framework

AWS Cloud (Customer)

Quality management training module

Configurable task coordinator

AWS Lambda

Amazon SQS

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Amazon eventbridge

Amazon EKS
Process executor

Amazon SageMaker & SageMaker Neo

Amazon SageMaker Ground Truth

Amazon RDS event, operational and configuration data storage

Amazon Lookout for Vision

EKS
Device management services

Advanced calculations & rules

ML dev ops workbench services

User Interface
Enterprise management & operations

ML model creation & management

Gateway management

10

Plant Manager

Operation Head

IT Engineer

11

Trainning images

Animated images

Compiled model

Trained model

7

Amazon S3

AWS IoT Site Wise

AWS IoT core

Amazon SageMaker edge manager

On-premises

AWS IoT greengrass on an industrial gateway

8

Supporting functions

Secret & shadow manager

Health monitor

S3 component sync

Command module

ONNX Runtime

4

Industrial equipment

Industrial PLC

Machinery   Machinery

1

Protocol adapters

Industrial camera

Input images

2

Dispatcher

3

ONNX compiled quality model

Processed images

AWS IoT SiteWise edge data collection pack

AWS IoT Greengrass stream manager

AWS IoT SiteWise edge data processing pack

5

Advanced aggregation

6

Postgre SQL container

Visualization - Angular UI

Asset nav

Operational dashboard

KPI's models

9

Use cases in action

Transforming fragmented systems into a cohesive digital backbone, enabling manufacturers to unlock enterprise-wide visibility, agility, and scalability

Real-time operational insights

UNS aggregates data from machines, systems, and sensors into a single, contextualized stream, enabling live dashboards and actionable insights across the entire production environment

Predictive maintenance

By centralizing and harmonizing data, UNS supports advanced analytics and machine learning models that anticipate equipment failures and optimize maintenance schedules

Operational agility

UNS bridges OT and IT systems, allowing seamless data flow between the shop floor and business systems, accelerating decision-making and digital transformation

Business Impact

Accelerated decision-making

Unified data streams empower stakeholders with real-time, contextual insights, reducing latency in operational and strategic decisions

Scalable architecture

UNS provides a flexible foundation for integrating new technologies, systems, and sites, supporting growth and innovation without rearchitecting core infrastructure

Operational agility

With a single source of truth, manufacturers can respond faster to market changes, production demands, and supply chain disruptions

Real-world impact

Case study
Embraer – a leading global aircraft manufacturer

Challenge

Embraer faced **fragmented data systems and lacked real-time visibility across its global operations,** limiting its ability to scale Industry 4.0 initiatives.

Solution

Cognizant implemented a UNS-based architecture powered by AWS Cloud, integrating data from diverse sources into a standardized, scalable model.

This enabled consistent operational insights and laid the groundwork for enterprise-wide digital transformation.

Outcome

$18M potential **savings** revealed over two years due to **precise real-time OEE tracking** and addressing under-reporting.

Enhanced operational insights and data quality directly contributing to improved manufacturing processes. Consistently better product quality was achieved through better asset utilization fostering **higher profits, client relationships, and brand value.**

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Connect with our subject matter expert

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Learn more about Cognizant and AWS partnership:
https://www.cognizant.com/us/en/services/cloud-solutions/aws-cloud
/aws-smart-manufacturing-at-scale

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