INNOVATE

DATA EDITION

23 August, 2022

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Optimizing industrial operations and simplify your digital twin journey

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IoT & Robotics, APJ
Amazon Web services

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IoT & Digital Twin
Amazon Web Services

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Agenda

- Digital Twin challenge
- AWS IoT Twin Maker - how it works
- Customer stories
- How to start with AWS IoT Twin Maker

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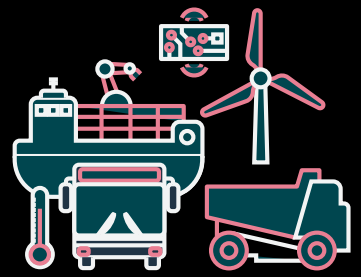
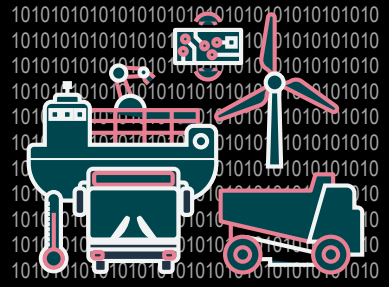
Digital Twins

A living digital representation of a physical system that is dynamically updated to mimic the structure, state, and behavior of the physical system to drive business outcomes



PHYSICAL SYSTEMS

CONNECTED WORLD



DIGITAL TWINS

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BUSINESS OUTCOMES

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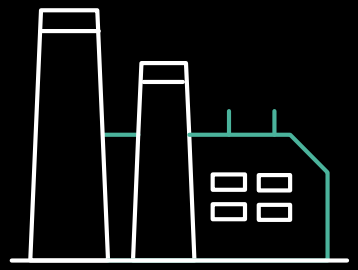
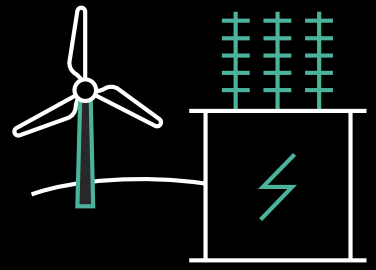
The promise of digital twins in industrial operations

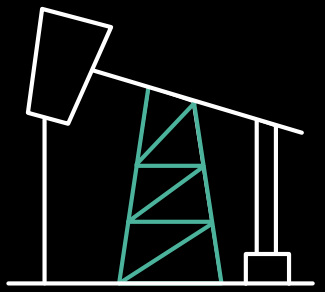


Manufacturing

Smart buildings



Power and utilities



Energy

Driving down cost and complexity in IoT, AI/ML, and Spatial Compute

Customers are rethinking the “Art of the Possible”

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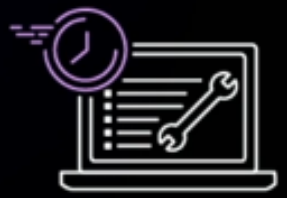
How are digital twins used in operations

Improve asset performance



Enhance productivity

Connect remote experts

Enhance tenant experience

Improve field service

Reduce Carbon footprint

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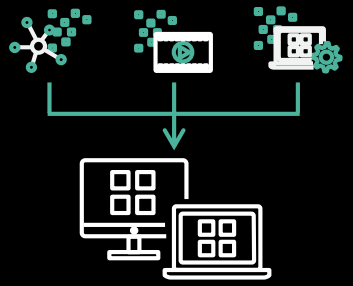
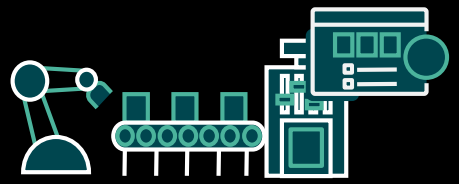
However, building digital twins is hard



Using data from disparate sources



Modeling assets over their lifetime

Creating effective visualizations

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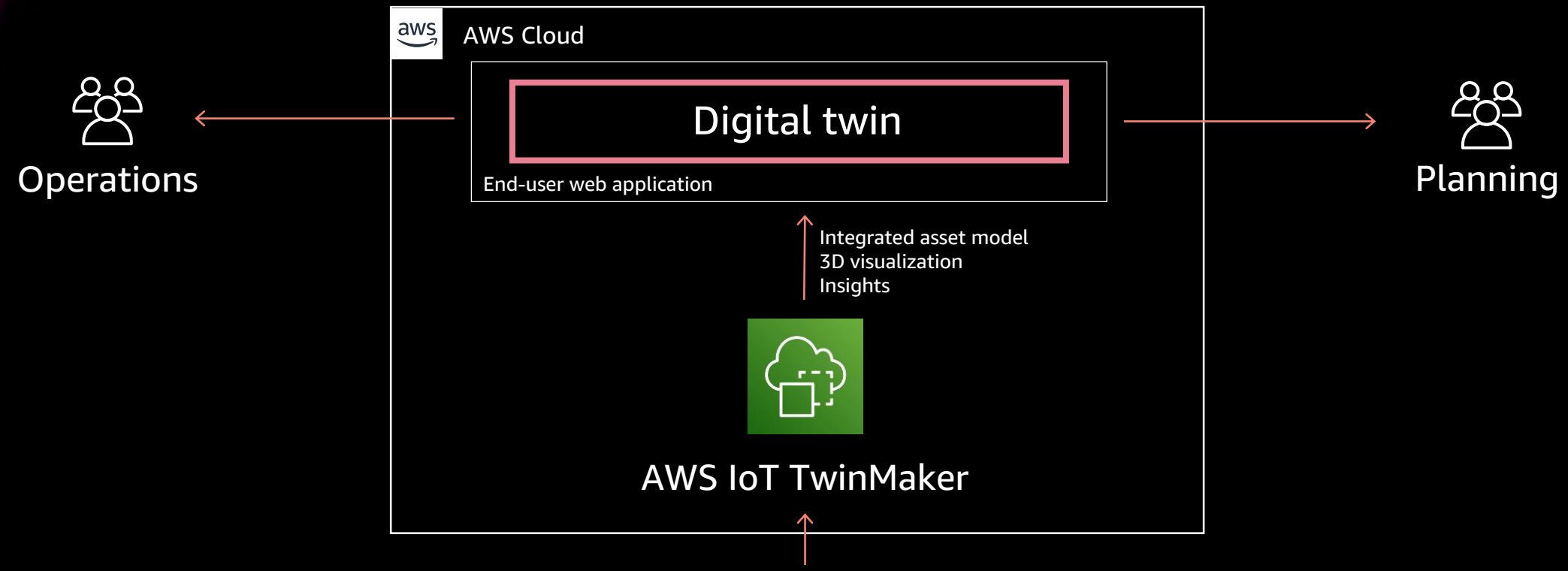
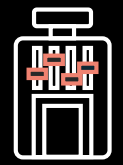
AWS IoT TwinMaker – How it works



Operational and maintenance history

Real-time IoT sensor data



Real-time process data

CAD/BIM models

Point cloud scans

Video feeds

Statistical and physics-based models

Geo-spatial metadata

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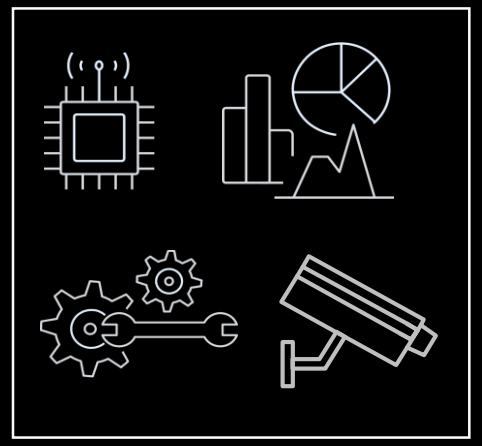
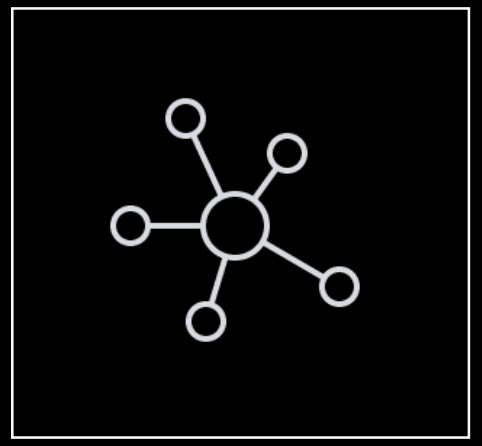
AWS IoT TwinMaker workflow



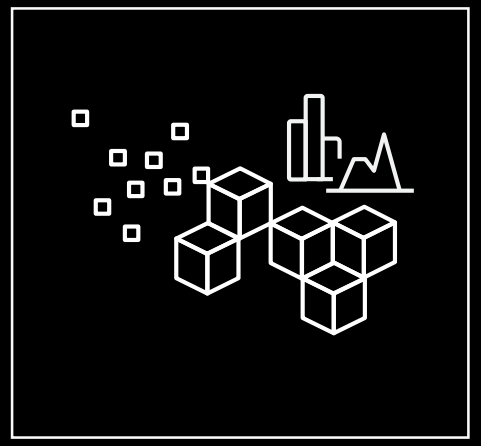
Data connectors

Connect to disparate data sources where they live



Model builder

Describe entity relationships and data properties



Scene composer

Create 3D scenes with spatial anchors for data

App toolkit

Build user-centric web apps for your digital twin

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Rules
Settings
TTwinMakerScene
nment
uipment
Mixers
CookieLines
WaterTank
Scene Statistics
Vertices: 35,782,502
Triangles: 5,970,439
Inspector
Properties
Name
Mixers
Transform
Position
X 0.000
Y 0.000
Rotation
X 0.000
Y 0.000
Scale
X 1.000
Y 1.000

Customer Case Studies

CHALLENGE

INVISTA, a subsidiary of Koch industries, is a leading global manufacturer of fiber, resins, and chemical intermediates. Its field personnel need to efficiently address operational notifications and alerts from the plant floor; however, equipment information is distributed across different systems. The need for an integrating platform bringing the right information to the right person, at the right time, in the right context is highly desirable.

SOLUTION

With AWS IoT TwinMaker, INVISTA can now build a digital twin of its manufacturing operations into a Connected Worker application that brings together live sensor data, equipment maintenance records, and plant-floor camera feeds into a recognizable visual context.

The solution envisions using AWS IoT TwinMaker to connect to existing IoT and equipment data stored in Snowflake and asset management data in OSIsoft PI System – integrated into a 3D visualization composed using Matterport digital scans of the physical environment.

IMPACT

- ✓ Improved productivity and efficiency in field operations
- ✓ Excellence in EH&S performance
- ✓ Further opportunities to use employee expertise in finding new and better ways to create value for its customers

"Using a digital twin of our manufacturing operations, our connected field personnel can proactively enable consistently high performance of our plant assets."

Jerry Grunewald, Vice President of Operations Innovations, INVISTA

Learn more

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Customer Case Studies

SIEMENS energy

CHALLENGE

Increased renewables on the grid are requiring power plants to adapt their operations from base-load operation to load-following, which is different than originally designed. The increased load-following cycling is resulting in increased corrosion and fatigue failures in the Heat Recovery Steam Generator (HRSG) and increased inspection efforts during planned downtimes.

SOLUTION

Leveraging Siemens Energy's deep-domain engineering knowledge, we worked together to combine Siemens Energy's physics-based models with AWS' advanced probabilistic techniques to deploy a Level 4 Living Digital Twin.

This solution runs at-scale on the AWS cloud, connecting data-streams from power plants to update the models for reliable predictions of HRSG pipe corrosion and failure.

BENEFITS

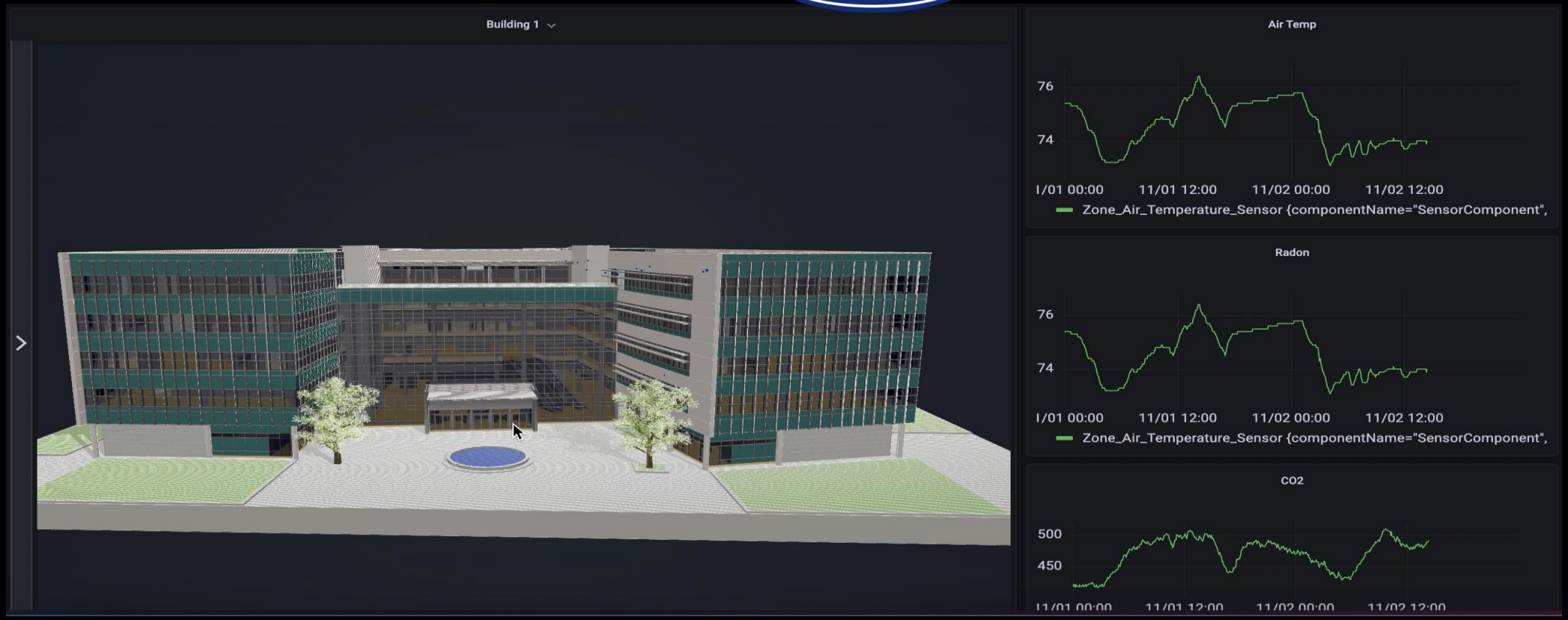
- ✓ Improved productivity and efficiency in maintenance and field operations
- ✓ Estimated reduced planned downtime of 60%

Learn more

aws

Customer Case Studies

Carrier



Allow **3D visualization of connected spaces** within Carrier's Abound platform for building owners and operators

Use AWS IoT TwinMaker to **create digital twins** – relating operational data and insights to spatial context of each building

Streamline decision making and corrective action

https://aws.amazon.com/iot-twinmaker/customers/

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AWS IoT TwinMaker – Partners

Software and hardware

Ready-made solutions that help you quickly get started and achieve results with digital twins

Services

Address your unique use cases with customized digital twin solutions, domain expertise, and accelerated deployments

Modeling, simulation, and visualization

Support and simplify your digital twin building experience with innovative tools and services in 3D modeling, simulation, visualization, and more

For a full list of partners you can refer to : AWS IoT TwinMaker Partners

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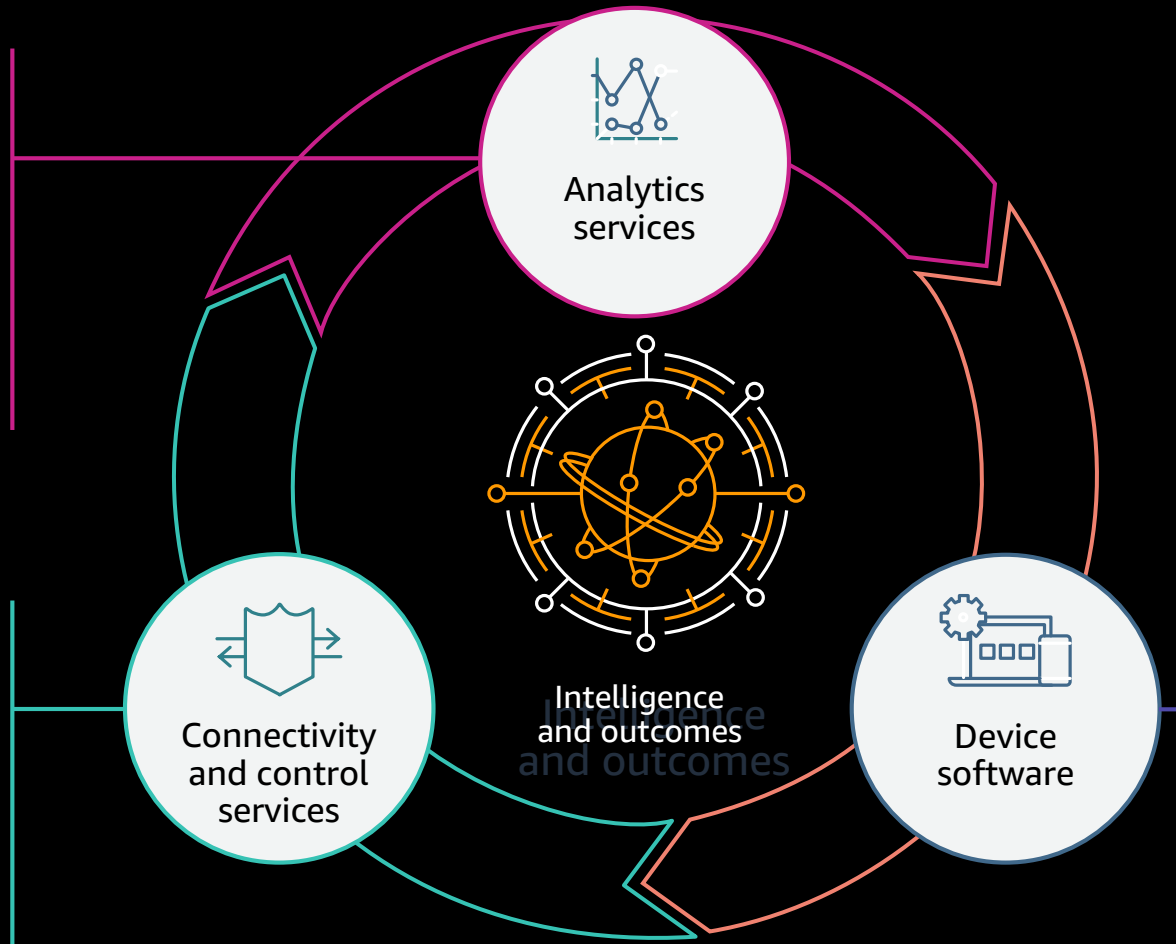
AWS IoT services enable you to do more with your data



AWS IoT SiteWise
AWS IoT Analytics
AWS IoT Events
Amazon Kinesis Video Stream
AWS TwinMaker

AWS IoT Core
AWS IoT Device Management
AWS IoT Device Defender
AWS IoT FleetWise
AWS IoT RoboRunner

FreeRTOS
AWS IoT Device SDK
AWS IoT Greengrass
AWS IoT Device Tester

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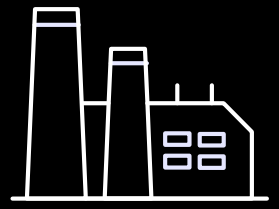
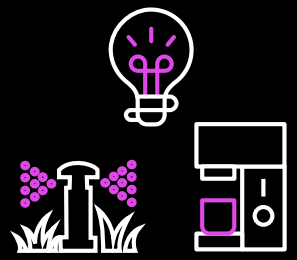
AWS IoT empower customers innovate and transform across sectors



Industrial and Energy

GE
CCI
Heineken
LOCKHEED MARTIN



Device Makers

WYZE
iRobot
verizon
Blueair

Automotive

HONDA
The Power of Dreams
TIER
VOLKSWAGEN

Buildings, Campuses, and Smart Cities

NOVETTA
enel

Healthcare

ecofit
PHILIPS

aws

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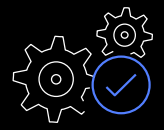
Interested ? Here are some ways to start

LEARN how AWS IoT TwinMaker works

Learn how to connect your data, model your physical environment, compose 3D scenes, and more

Discover AWS IoT TwinMaker features



BUILD with Free Tier

Get started with AWS IoT TwinMaker for free. You can use free tier access API calls each month for your first 12 months

ENGAGE for Discovery Workshops

Dive deep into your use case with our professional services team to develop a Minimal Viable Product PoC (MVP)

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Visit the AWS Data resource hub

A modern data strategy can help you manage, act on, and react to your data so you can make better decisions, respond faster, and uncover new opportunities. Dive deeper with these resources today.

- Harness data to reinvent your organization
- In unpredictable times, a data strategy is key
- Make data a strategic asset
- Rewiring your culture to be data-driven
- Put your data to work with a modern analytics approach
- … and more!

https://tinyurl.com/aws-data-hub

Visit resource hub

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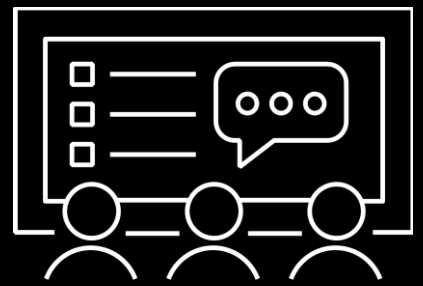
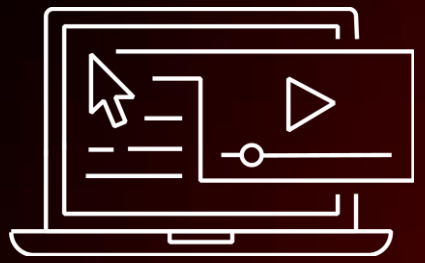
AWS Training and Certification for Data and Analytics



AWS Data & Analytics FREE Training Resources

Discover how to harness data, one of the world's most valuable resources, and innovate at scale.

https://bit.ly/3Ntlhy7



AWS Data Analytics Learning Plan

This learning plan expose you to the fastest way to get answers from all your data to all your users. It can also help prepare you for the AWS Certified Data Analytics - Specialty certification exam.

https://bit.ly/3wBVjD1

AWS Certified Data Analytics - Specialty

Earning AWS Certified Data Analytics – Specialty validates expertise in using AWS data lakes and analytics services.

https://go.aws/3lwF0RR

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Thank you!

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