

AWS
re:Invent

I O T 3 5 8 - R 1

Operationalizing Your Analysis with AWS IoT Analytics

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Agenda

AWS IoT Analytics Overview

Challenges in operationalizing analysis

Use Cases in AWS IoT Analytics help

C2RO on AWS IoT Analytics


AWS IoT Analytics Walkthrough Demo

AWS IoT Analytics



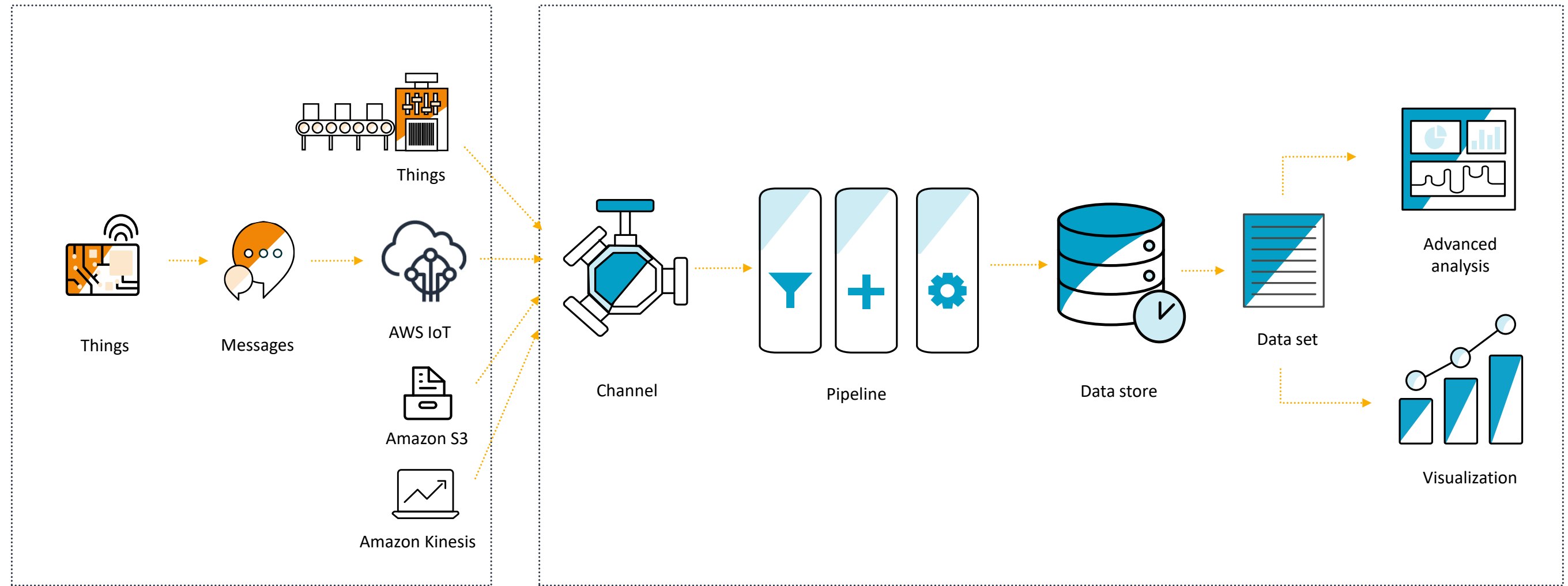
Analytics for IoT devices

AWS IoT Analytics is a fully managed service that collects, pre-processes, enriches, stores, analyzes and visualizes IoT device data at scale.



From raw sensor data to sophisticated IoT analytics.

AWS IoT Analytics Overview

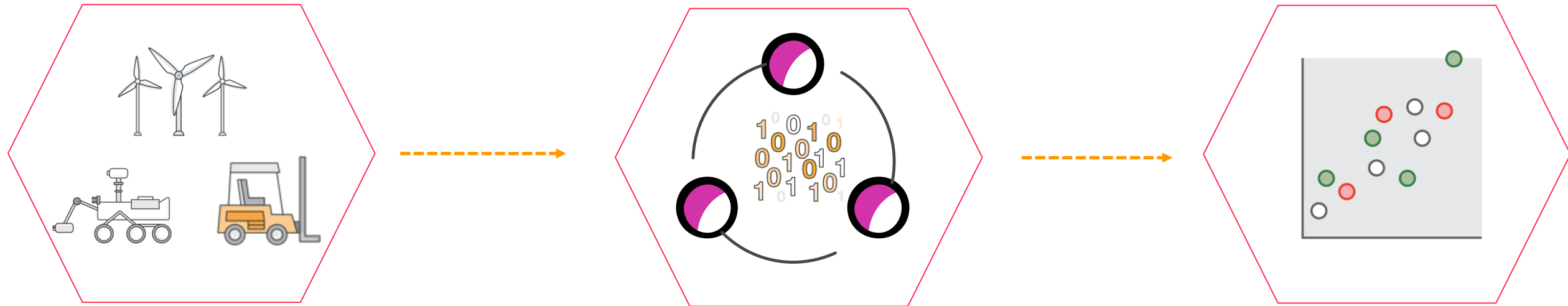


Data Sources

 **AWS IoT Analytics**

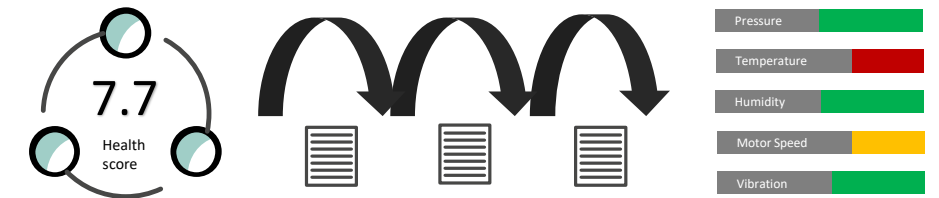
Operationalizing the Analysis

A process of running continuous analysis on production systems for product optimization and superior customer experience.

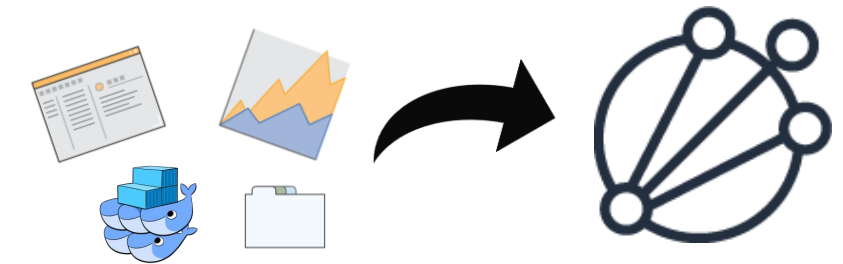


Challenges in operationalizing analysis

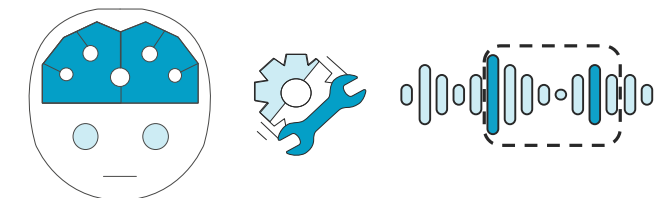
How do I do continuous analysis on AWS IoT Analytics?



How do I integrate my existing analysis created in external tools on AWS IoT Analytics?



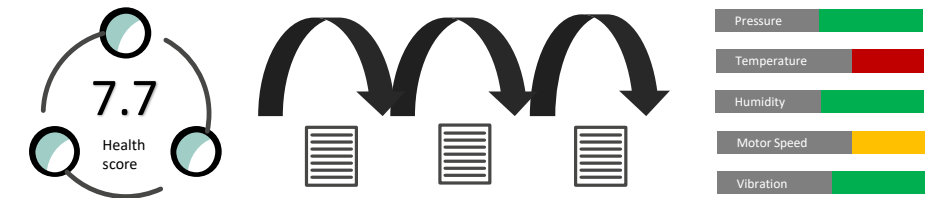
How do I keep my machine learning models up to date on AWS IoT Analytics?



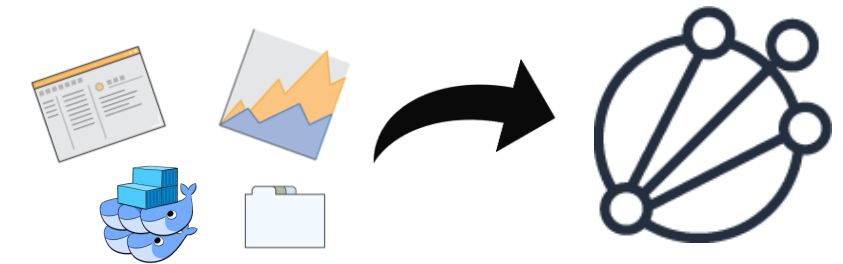
Challenges in operationalizing analysis



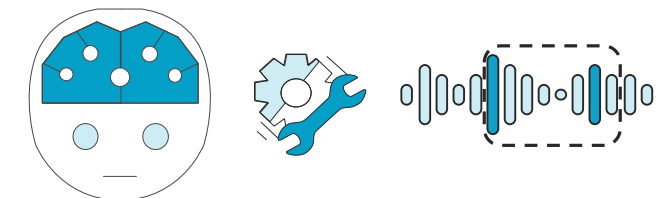
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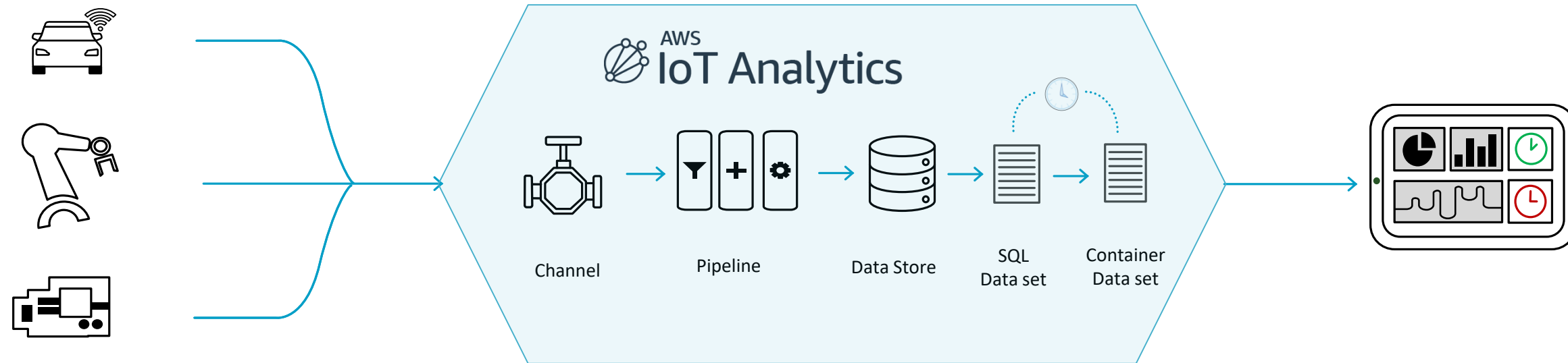


How do I keep my machine learning models up to date on AWS IoT Analytics?



Use Cases in AWS IoT Analytics to operationalize analysis

Run continuous analysis with state management



**Operationalize your
Analyses on AWS
IoT Analytics**

- Schedule your analysis with customizable windows
- Automate your analytical workflows for continuous insights
- Perform stateful analysis on your data

Run continuous analysis with state management

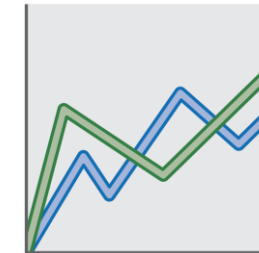
Industrial brewing customer uses Beer Membrane Filtration (BMF) system to filter beer which has smart valves that measure pressure, humidity and temperature change events. The BMF system has different states and collates events on a periodic basis and at certain events such as valve open and close. They want to analyze the data from BMF to continuously measure the Beer quality.



Beer Membrane Filtration

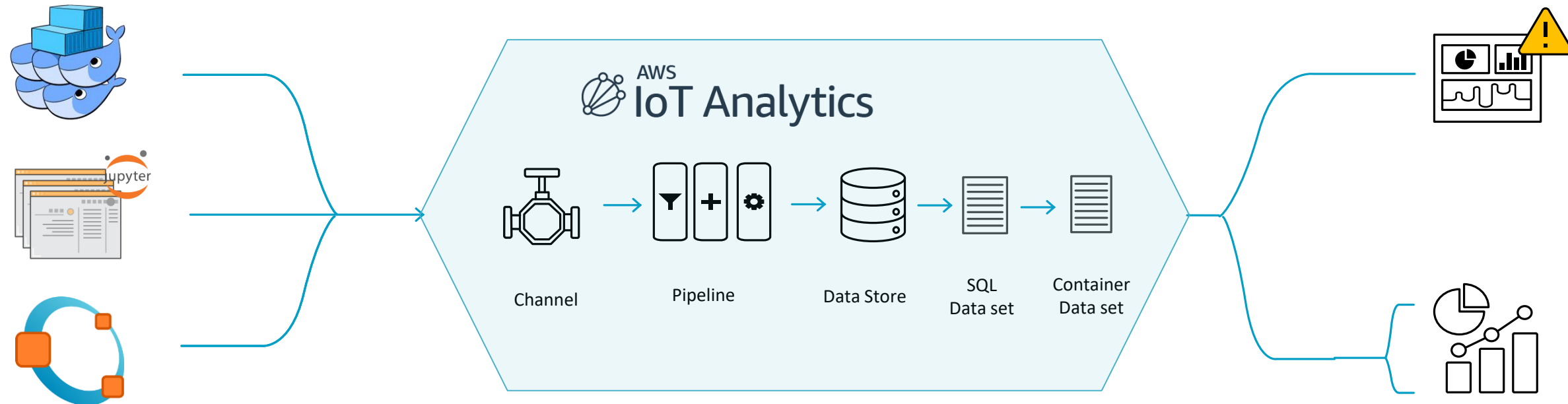


AWS IoT Analytics



Customer builds a continuous analysis that would aggregate the non-overlapping data within the periodic windows for analysis and create KPI reports on beer quality. Customer stores the result of each analysis as a state and uses it for subsequent analysis. After processing of each batch of beer (capacities from 70 to 900 hectoliters), they measure the overall beer quality and lower their Opex through maximized run volume.

Bring your own custom analysis



**Perform In-Depth
Custom Analysis on
AWS IoT Analytics**

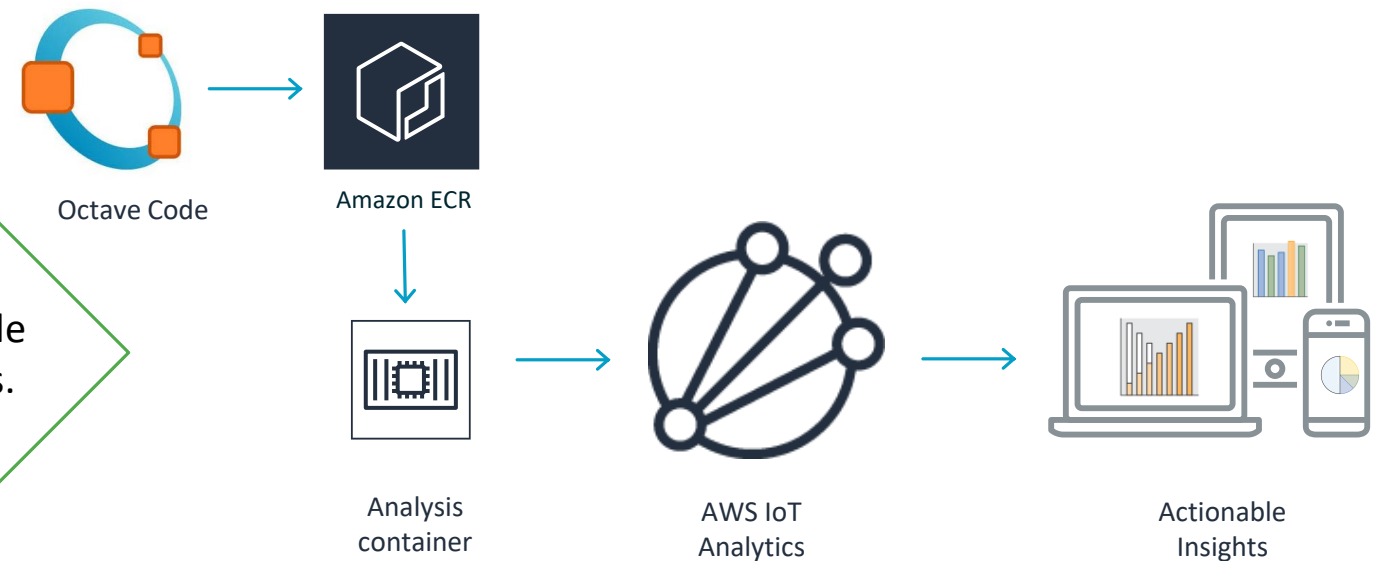
- Import your own custom tools containers on IoT Analytics
- Execute your own custom analysis, packaged in a container

Bring your own custom analysis

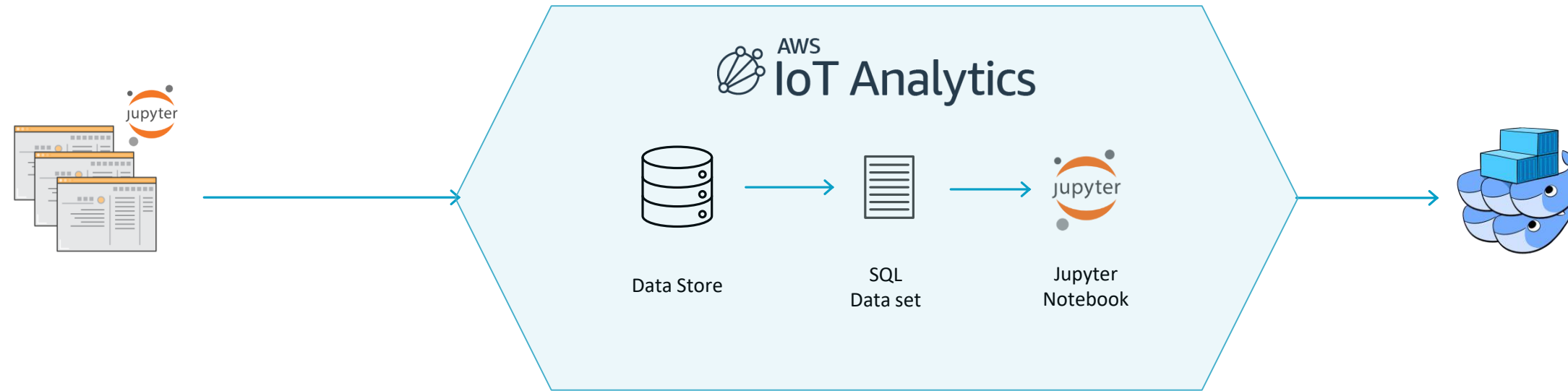
A consumer device manufacturer has created their analytical models in internal tools using Matlab and Octave. They want to execute their custom analysis on AWS IoT Analytics to understand how their customers are using their products for each usage session and gain insights to improve customer experience on their products.



The customer simply imports their Matlab and Octave custom analyses code containers on AWS IoT Analytics and executes them as needed to gain insights.



Automate Jupyter Notebooks Execution



**Containerize your
Jupyter Notebooks**

- Create executable containers from Jupyter Notebooks in a click
- Package all your associated libraries and code in an executable image

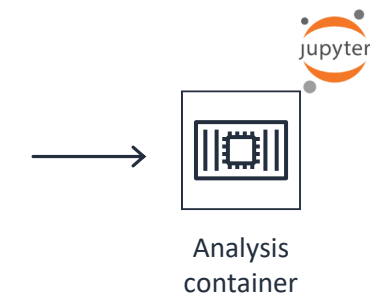
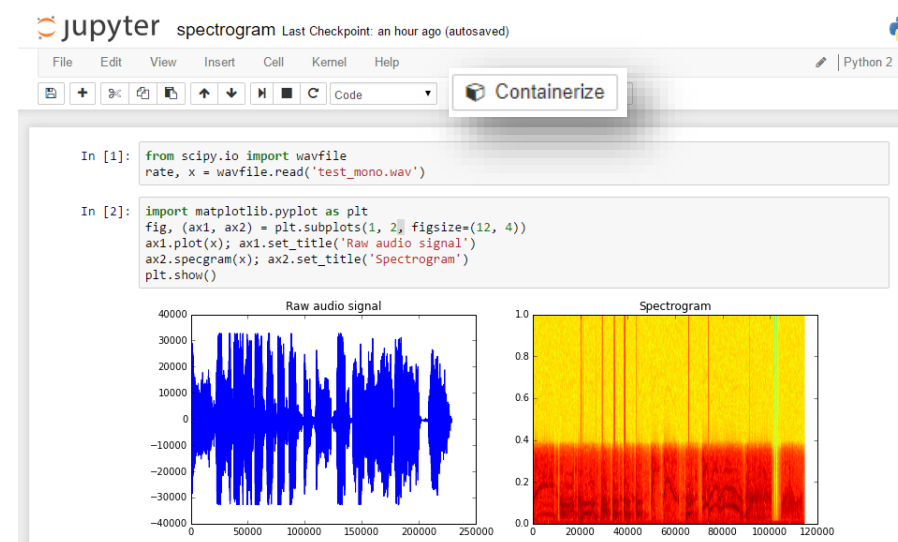
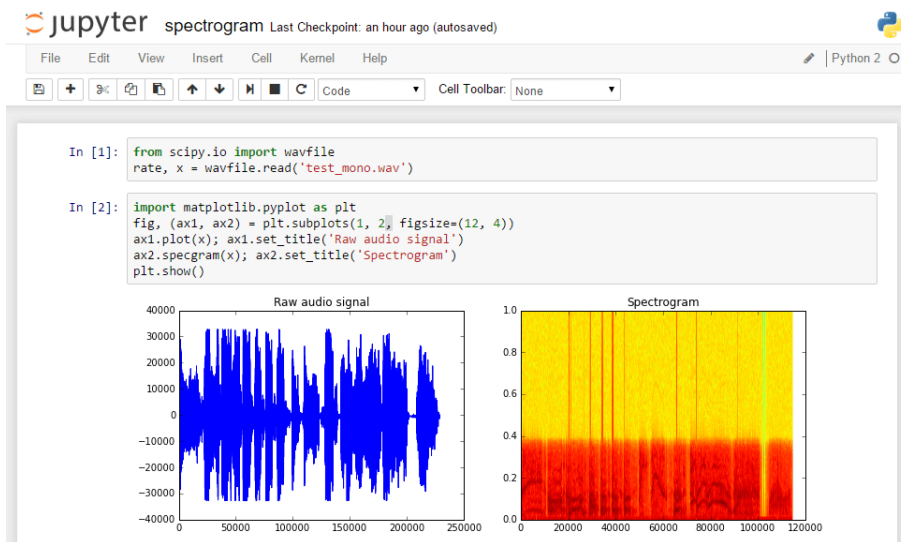
Automate Jupyter Notebooks Execution

An oil and gas company has a data scientist team which has put together advanced analysis code in Jupyter Notebooks to identify vibration patterns in the oil rigs. They want to centralize and operationalize their Jupyter Notebook analysis code into production without manually running the notebooks.



AWS IoT Analytics

They package their analysis code into an executable Docker image at a centralized location with just a click of a “Containerize” button. They use this container in AWS IoT Analytics and execute it as needed.



Visualize Embedded Dashboards



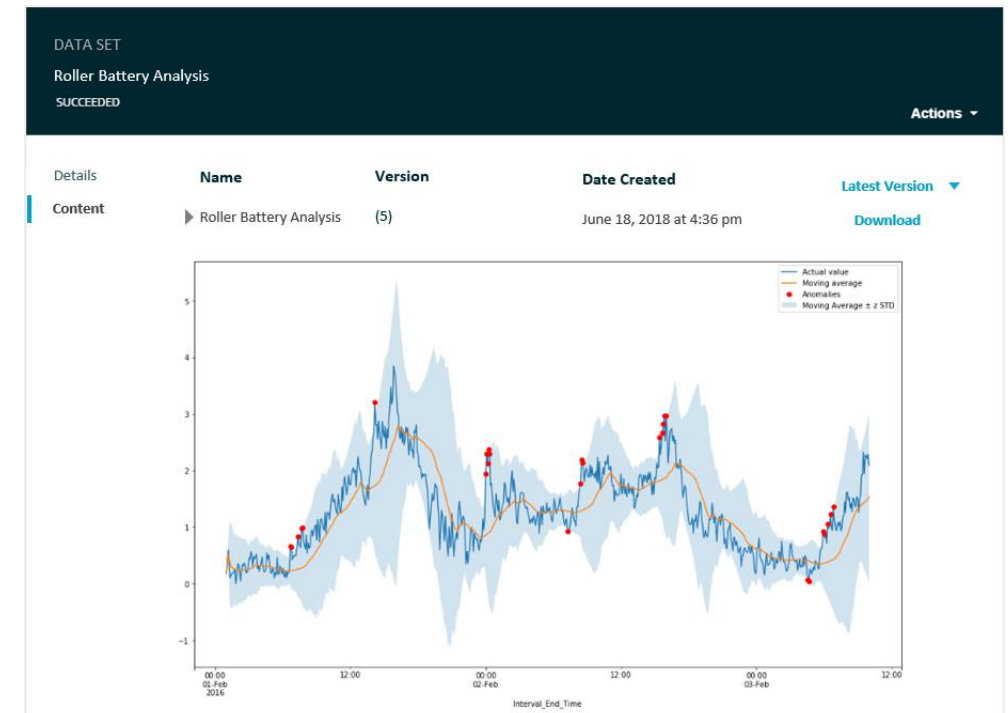
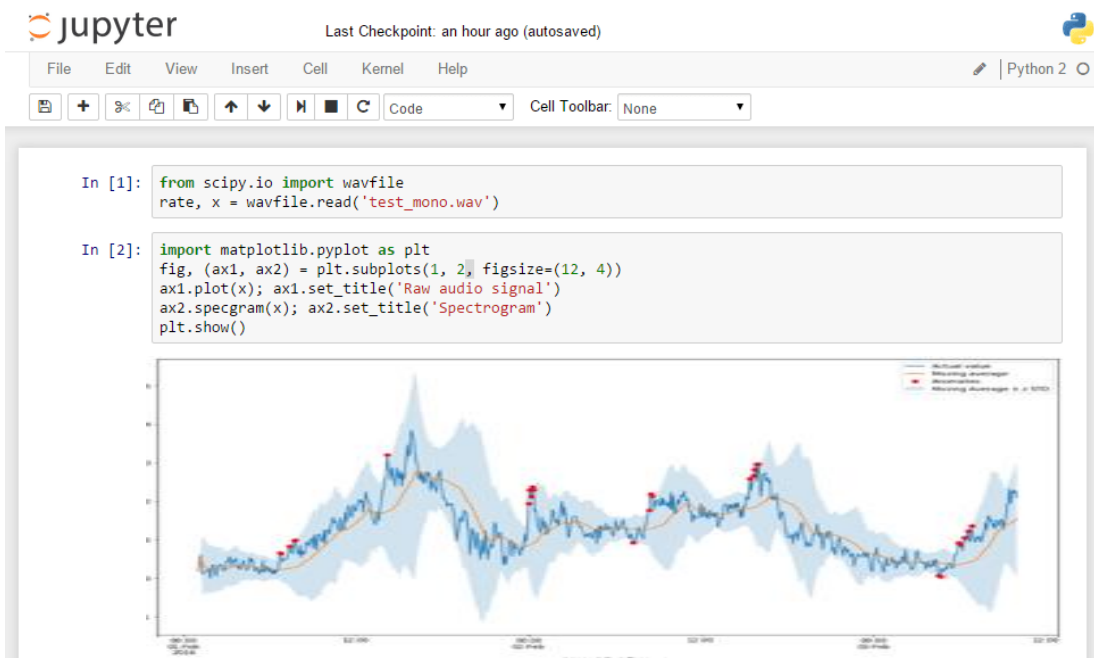
**Extract Visual
Insights from
Analysis**

- Visualize your analytical insights from within the AWS IoT Analytics console
- Automatically refresh the visualization whenever your analysis workflow triggers

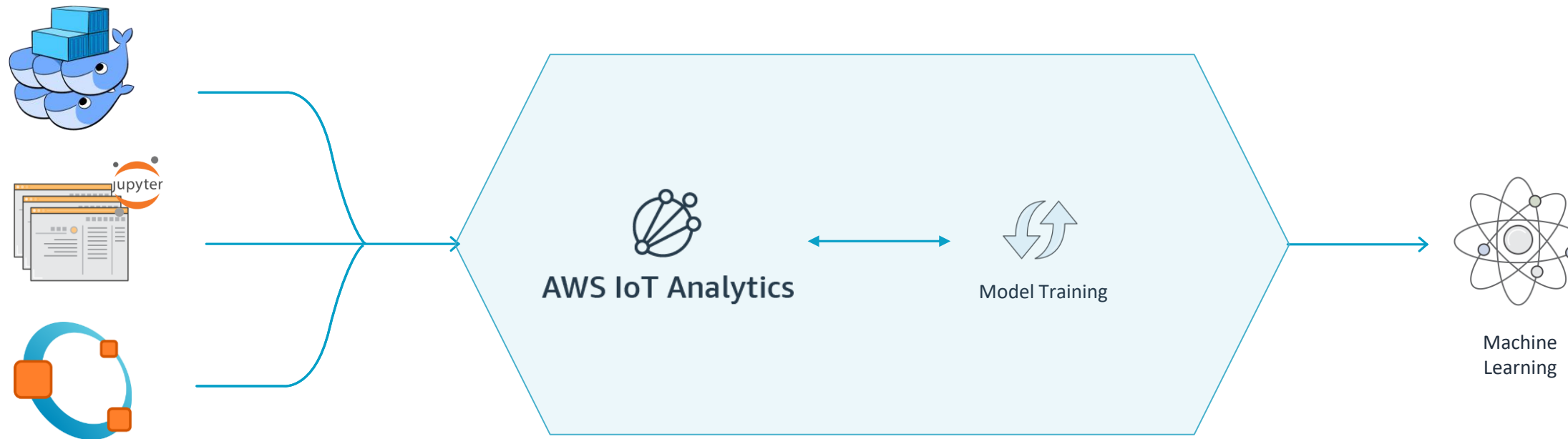
Visualize Embedded Dashboards

An industrial customer wants to visualize their continuous analysis results on AWS IoT Analytics to validate their insights and ensure their equipment is performing optimally.

They visualize the results of the analysis on AWS IoT Analytics console. The visualizations automatically refresh whenever their analysis cycle triggers.



Automatic Train/Retrain the ML Models



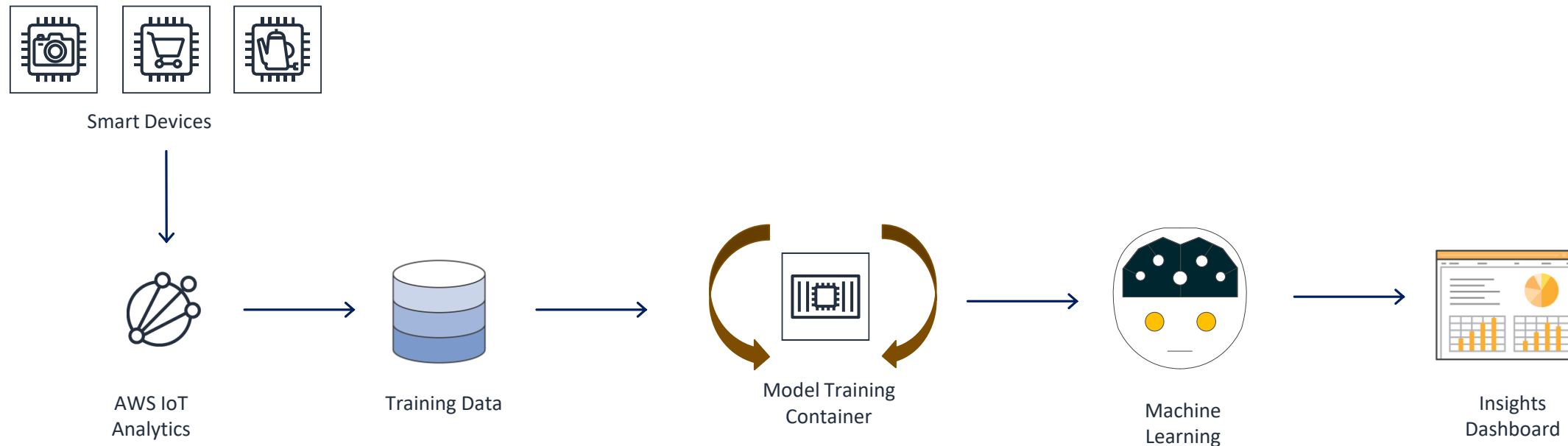
Keep your Machine Learning Models Accurate

- Train your Machine Learning Models with latest data for accurate insights
- Retrain your Machine Learning Models at a customizable schedule

Automatic Train/Retrain the ML Models

A Consumer device manufacturer has created Predictive Maintenance and Anomaly detection Models in AWS IoT Analytics for their devices. They want to automatically train and retrain those models so that they can accurately predict the device maintenance cycles and take proactive measures before the device malfunctions.

They create a weekly analysis data set in AWS IoT Analytics with Delta Window, which will analyze the new data arrived since last analysis and send it to their predictive maintenance and Anomaly detection models for training. The weekly cadence will ensure that their model gets retrained every week with the new data and yield results with high accuracy.



Mine the Moment with AWS IoT Analytics

Riccardo Badalone, CEO
C2RO

HERE·&·NOW (heer-and-nou) *n.*

1.in-person, real world insights leading to
meaningful interaction in the moment.

- *C2RO*

Online > Mobile > **Here & Now**

A major disruption to the \$200B/year Online and Mobile Ad Markets is underway.

C2RO is breaking through with AWS.

Here & Now is Insights and Persuasion

Real-Time Machine Intelligence is the key to unlocking the value.

Friends & Affiliations



Style & Preference



Interests & Curiosities



Legacy Technology is Broken for the Here & Now

- ✗ Video Streaming
Too much bandwidth
- ✗ Wired Communication
Too restrictive
- ✗ Surveillance systems
Too sparse



*Security Systems are for security... NOT
Machine Intelligence*

C2RO's Powerful A.I. Platform Breaks Through

- ✓ 8x Lower Latency
- ✓ 10x Less Bandwidth
- ✓ Any Device, Anywhere



An Enterprise Platform for Instant Recognition & Analysis



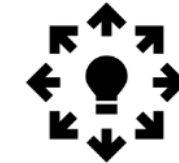
Demographic and Situation Analysis



Customer Recognition



Integration with Business Systems (CRM)



Millions of Customers & Devices World Wide

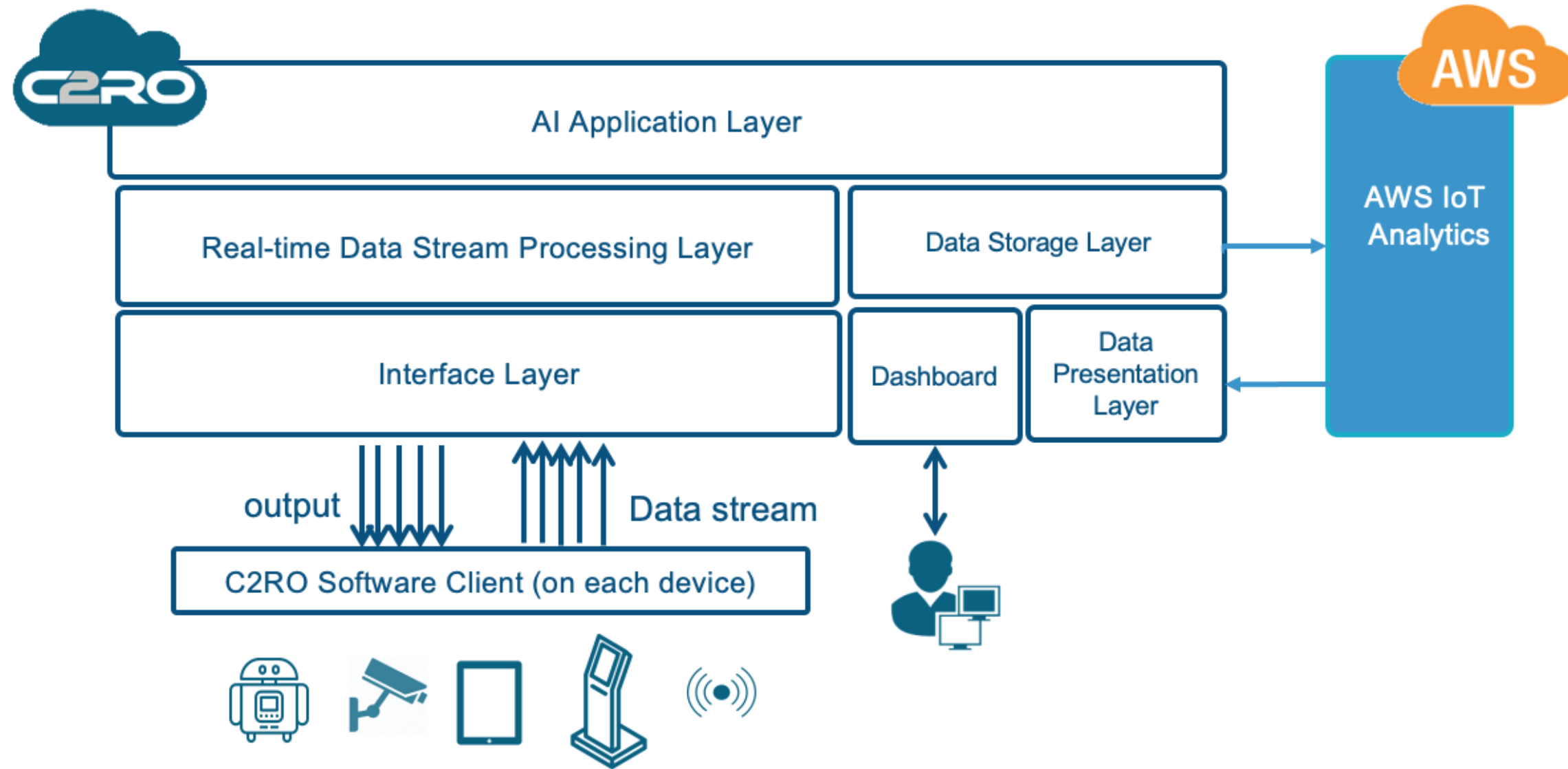


Customizable Actions Per Device/Customer Type

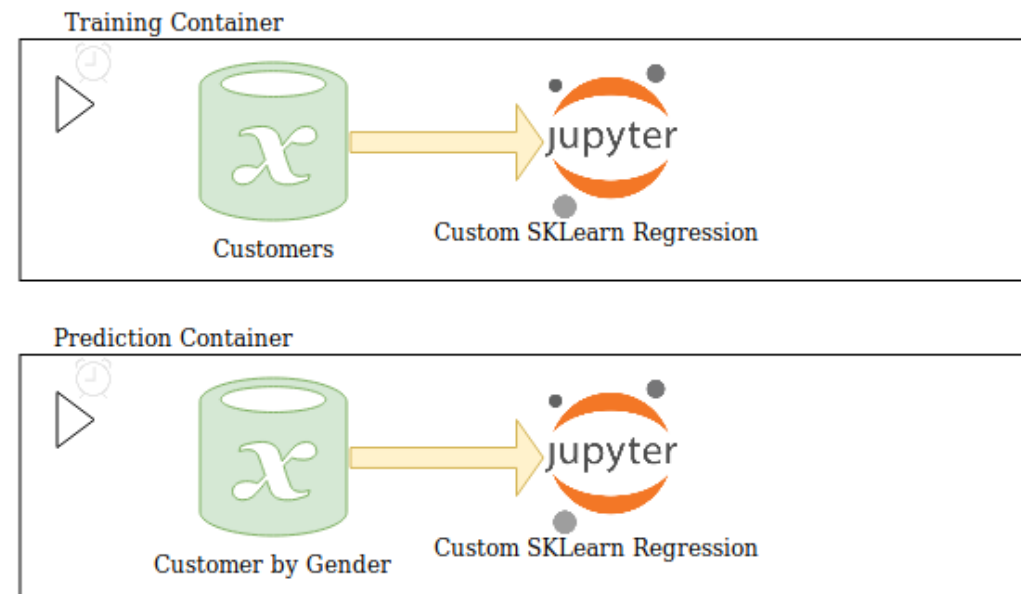
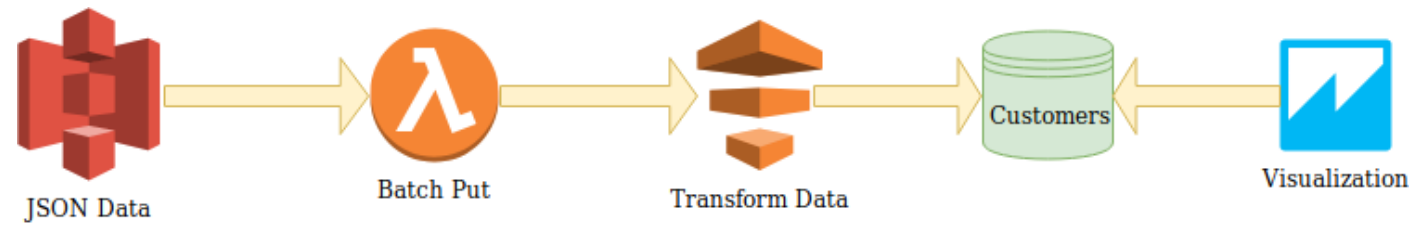


Real-time Data Analysis & Prediction

Platform Integration with AWS



Details for AWS IoT Analytics Integration



Enabling the World's First Real-Time Mall Ad Exchange Initiative

1. Retail mall is controlling the exchange
2. Tons of *new and dedicated* wireless cameras capturing the details using real-time AI
3. Real-Time Communication enabling the retail ecosystem to bridge the online and in-store journey

It all starts with Mine the Moment.

What can AI see?

- Male between 33 – 38
- Woman between 33-38
- 2 children
- Walking in group of 4
- 4 pair of jeans
- 8 shopping bags
- 4 smiles

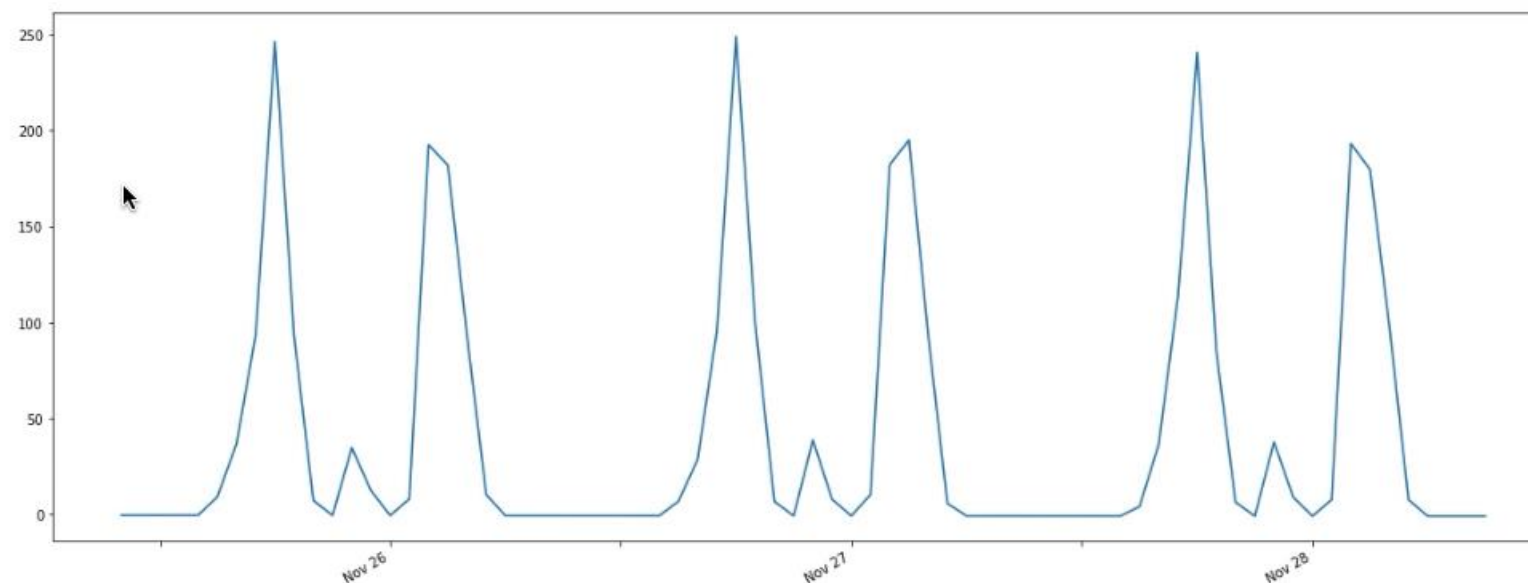


Demo Time!

☐ Show input cells

AWS IoT Analytics | Notebook

Daily Shopper Analysis for Nov 26 to Nov 28

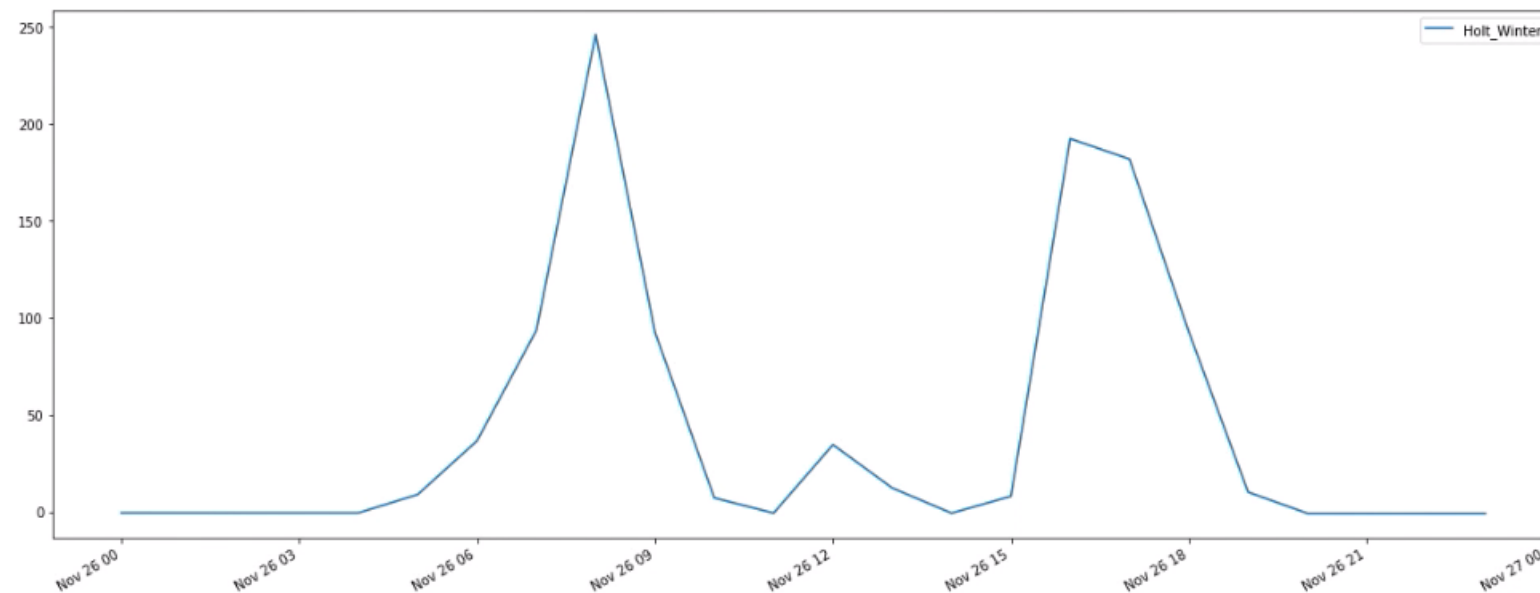


Hourly Shopper Breakdown for Nov 26

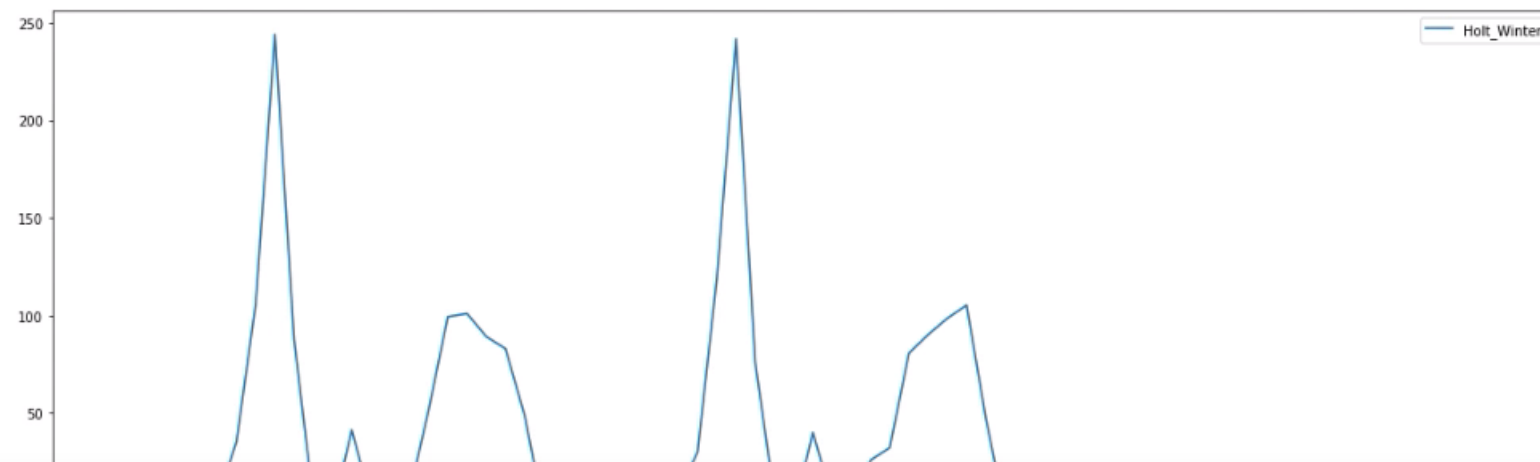


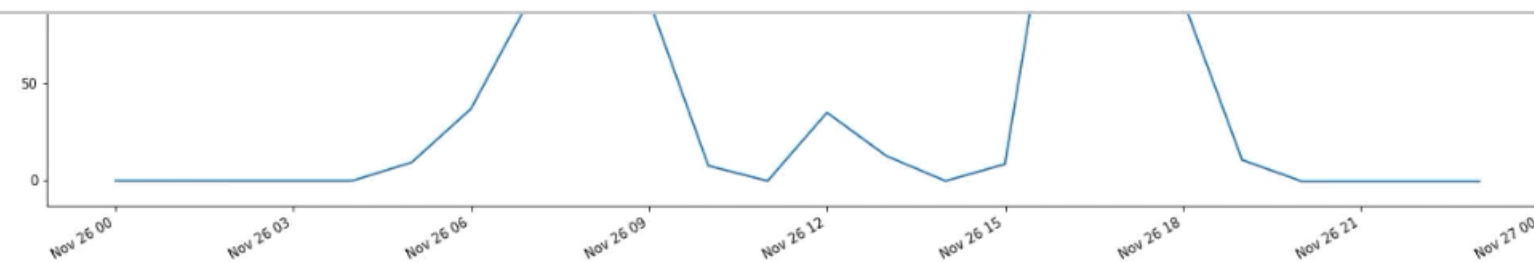
☐ Show input cells

Hourly Shopper Breakdown for Nov 26

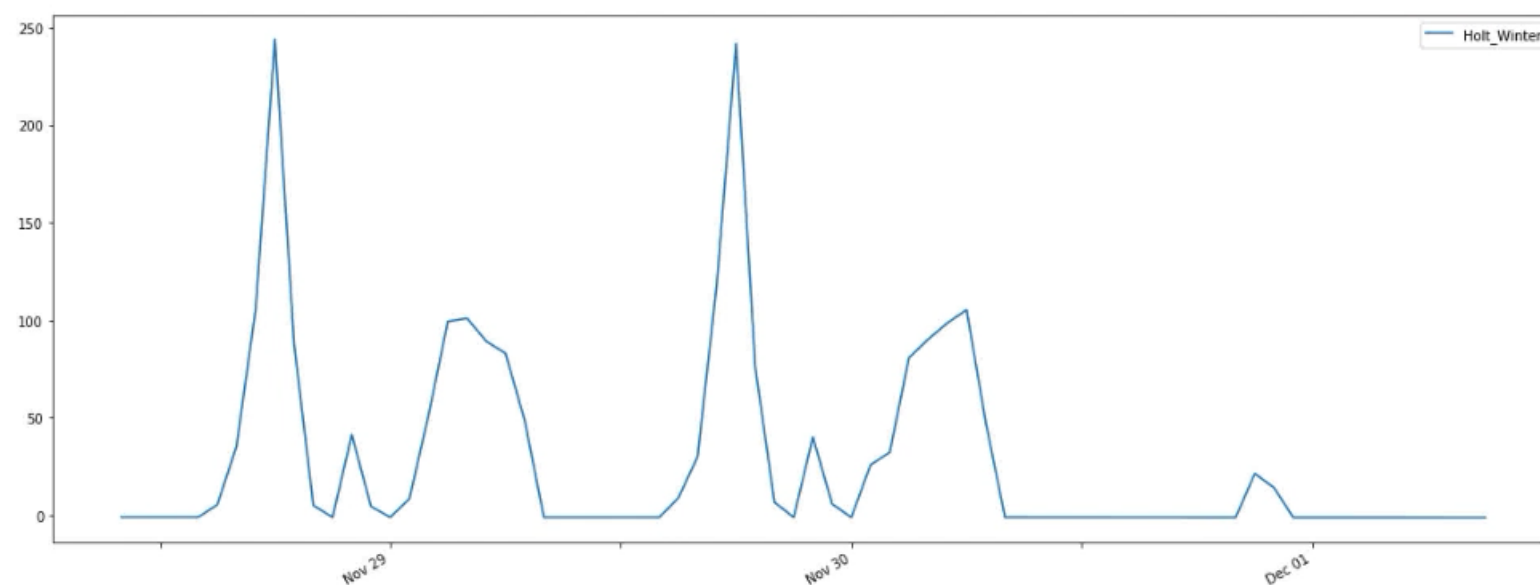


Daily Shopper Projection for Nov 29 to Dec 1



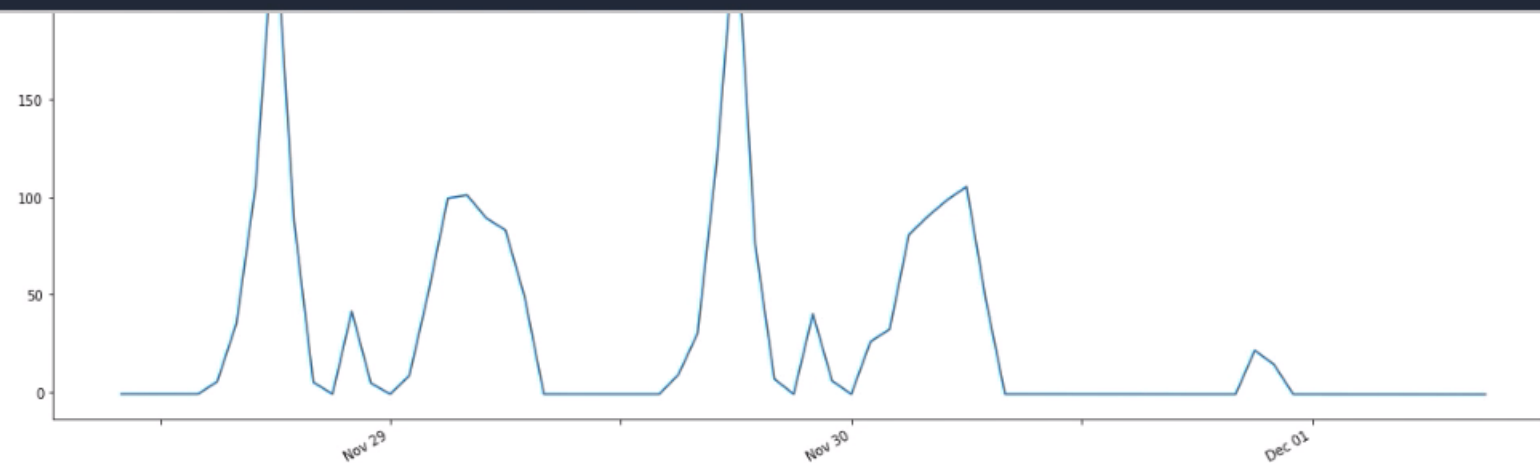
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Daily Shopper Projection for Nov 29 to Dec 1

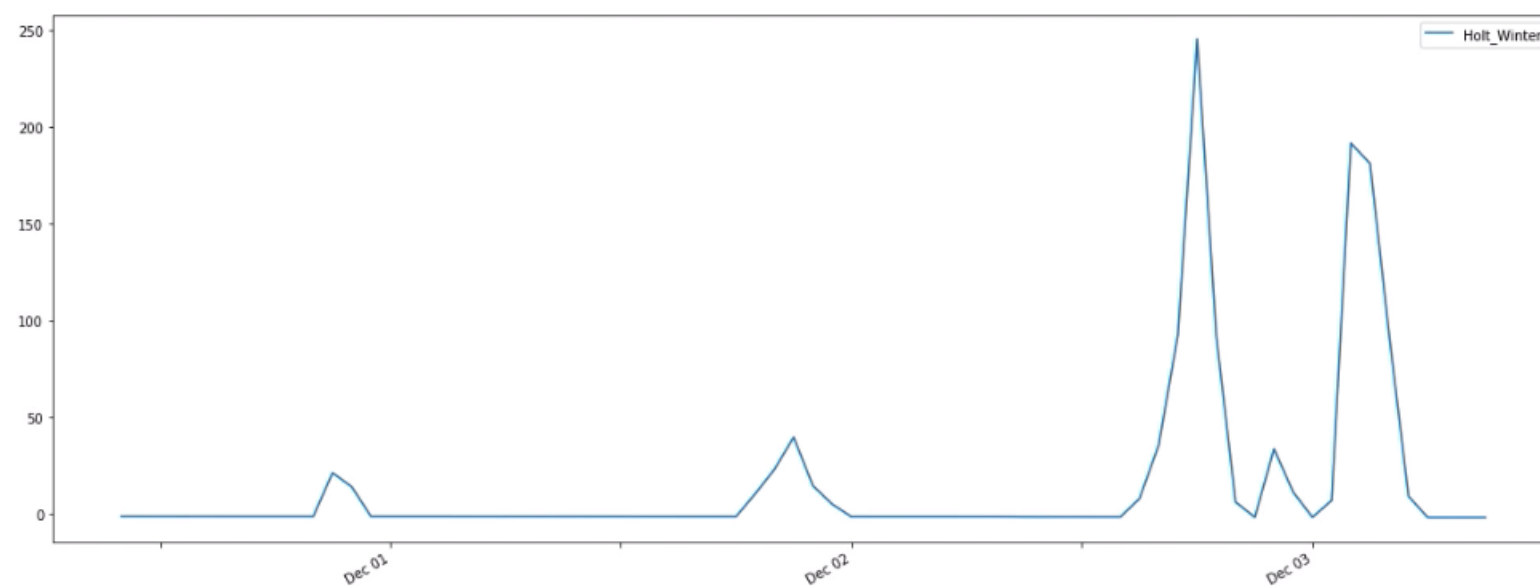


Daily Shopper Projection for Dec 1 to Dec 3





Daily Shopper Projection for Dec 1 to Dec 3



Where the value is

AWS IoT Analytics – A fully managed service



Operationalize your analytical workflows



Machine Learning Models and Templates



Simplifies IoT Data Preparation

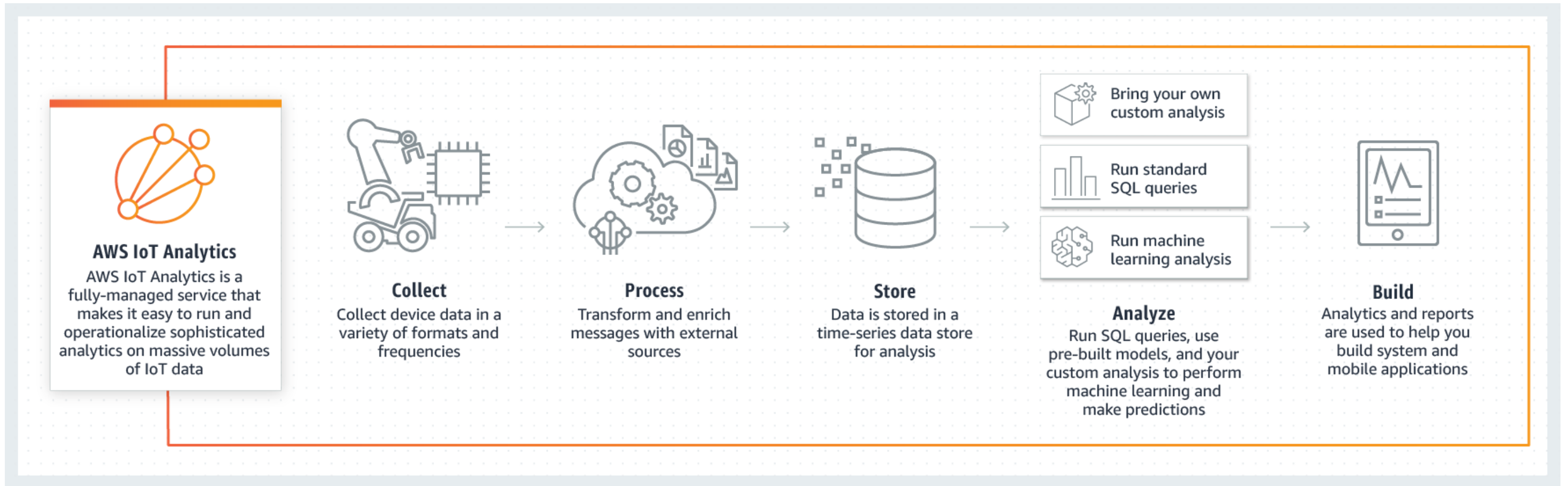


Scales with your Fleet



Time-Optimized IoT Data Storage

Summarizing the Journey



How do I get started?

Learn more at

aws.amazon.com/iot-analytics

Thank you!

Vikas Panghal
Senior Product Manager
AWS IoT Analytics and
Applications

Dominique Fortier
Senior Software
Development
Manager
AWS IoT Analytics and
Applications

Riccardo Badalone
CEO
C2RO



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survey in the mobile app.