
AWS
re:Invent
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MFG206

Reinvent your supply chain

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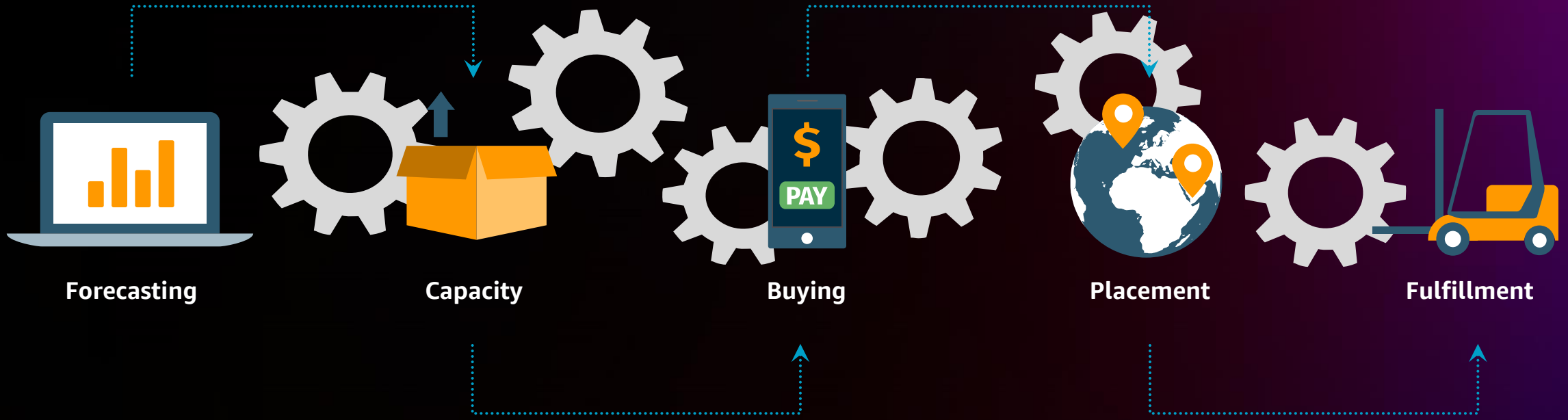
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Data Scientist
Samsung Electronics

aws

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AWS is powering Amazon's automated supply chain



Demand forecasting for over 400m products daily

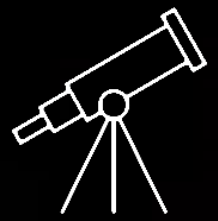
200+ fulfillment centers, 200,000+ robots, 19,000 trailers, and 30,000+ delivery vans

Fulfill the customer promise

(1+ billion packages shipped to Prime customers last year)

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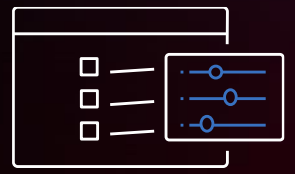
Supply chain focus areas for our customers



Real time visibility in end-to-end supply chain is table stake



Data to actionable insights to improve execution and planning



Information and intelligence integrated from external data sources



Focus on predictive analytics, rather than reactive metrics



Account for inventory and capacity risks to achieve resiliency in supply chain



Plan for both in-crisis and post-crisis situations during disruptions

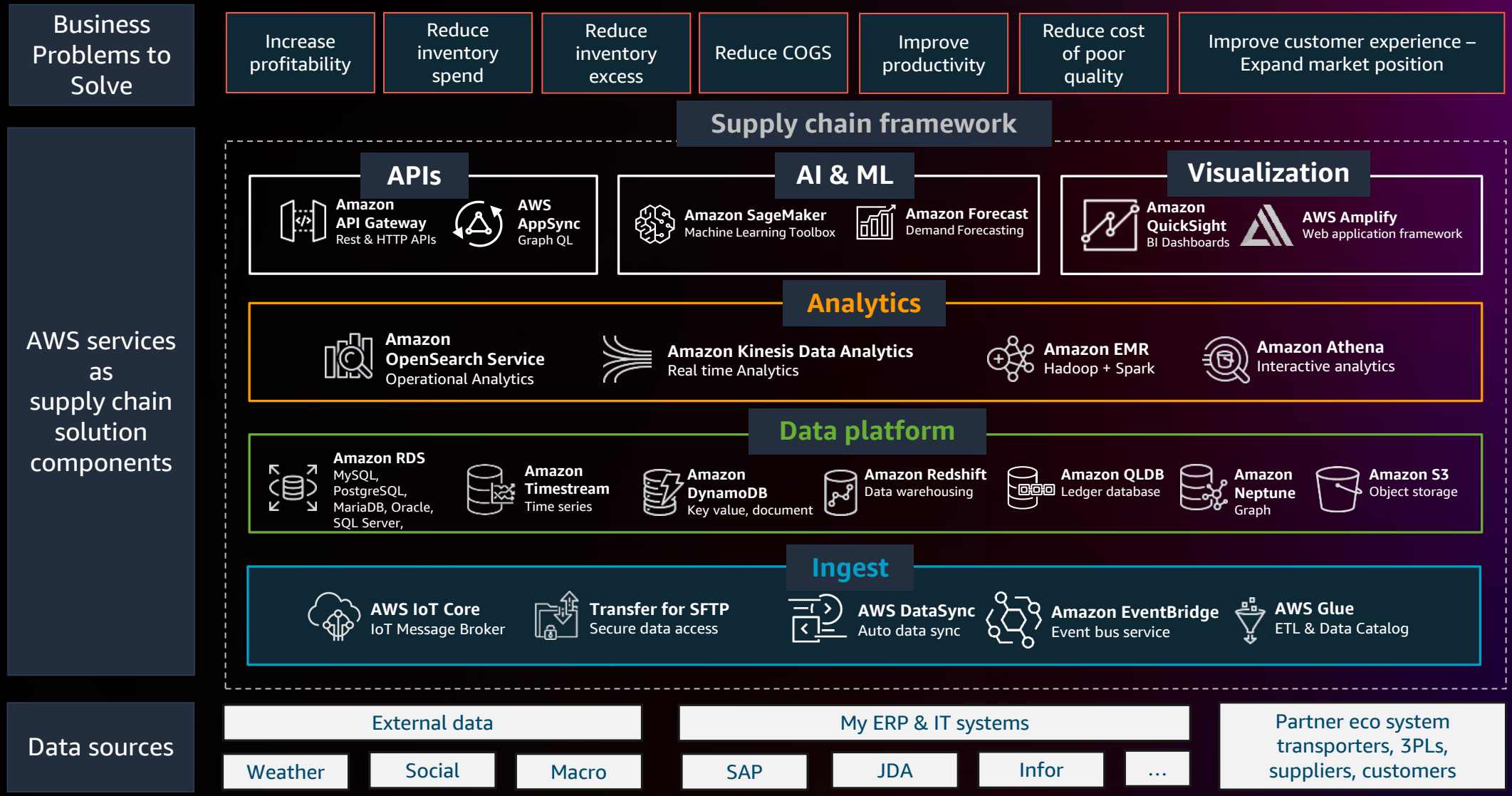


Focus on engaging and embracing existing systems versus replacing

aws

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AWS provides the building blocks for supply chain use cases



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Airbus

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We make it fly!



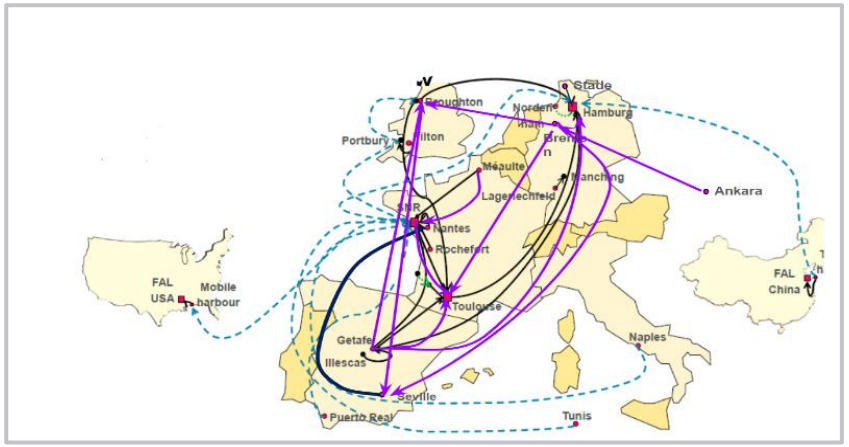
21,518
Aircraft sold

400+
Customers

14,179
Delivered

AIRBUS

Challenges





A complex industrial environment

- Several countries
- Multiple aircraft programs
- A multitude of logistics flows (internal, partners, and suppliers)

Common objectives

- On time delivery
- Elimination of tasks without added value (calls, search, etc.)
- Shared visibility – centralized and historized information

Examples

Oversized transport

Constituent assembly

Frame

Tools

AIRBUS

Objectives

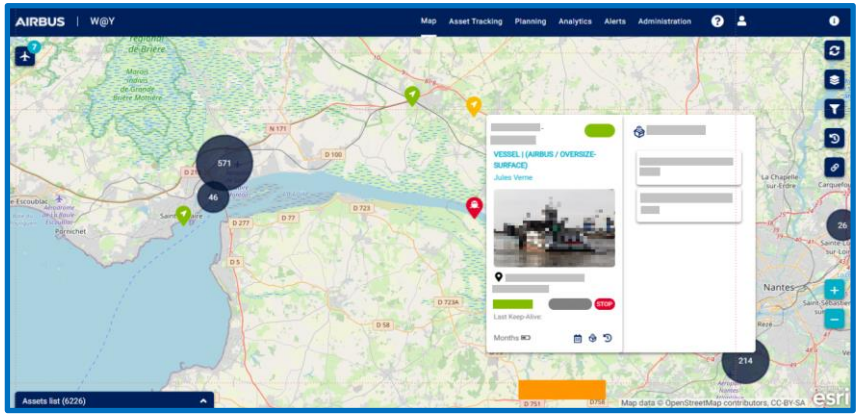
- Stop the local initiatives – “think global”
- Be agnostic of the technology
- Be scalable (+250% of tracked asset in 2 years)
- Control the costs



Use case



Technology



W@Y - Where are you?

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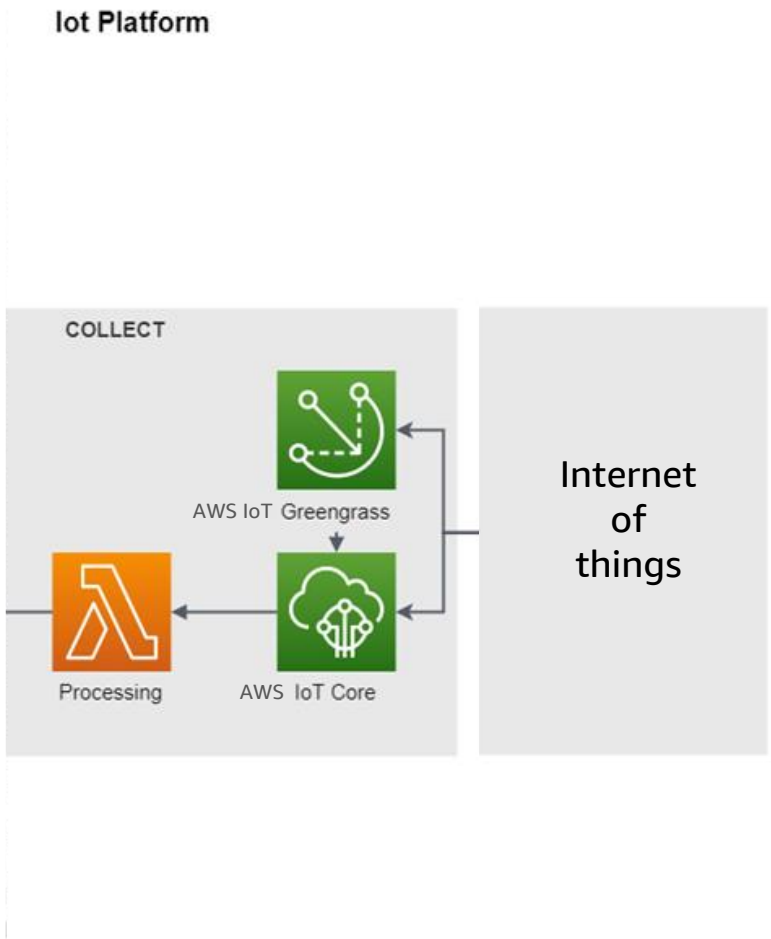
Architecture

Ingestion

The IoT Platform managed by the SQUID team

Used AWS services: AWS IoT Greengrass and AWS IoT Core

Data of IoT devices associated to logistics and manufacturing assets



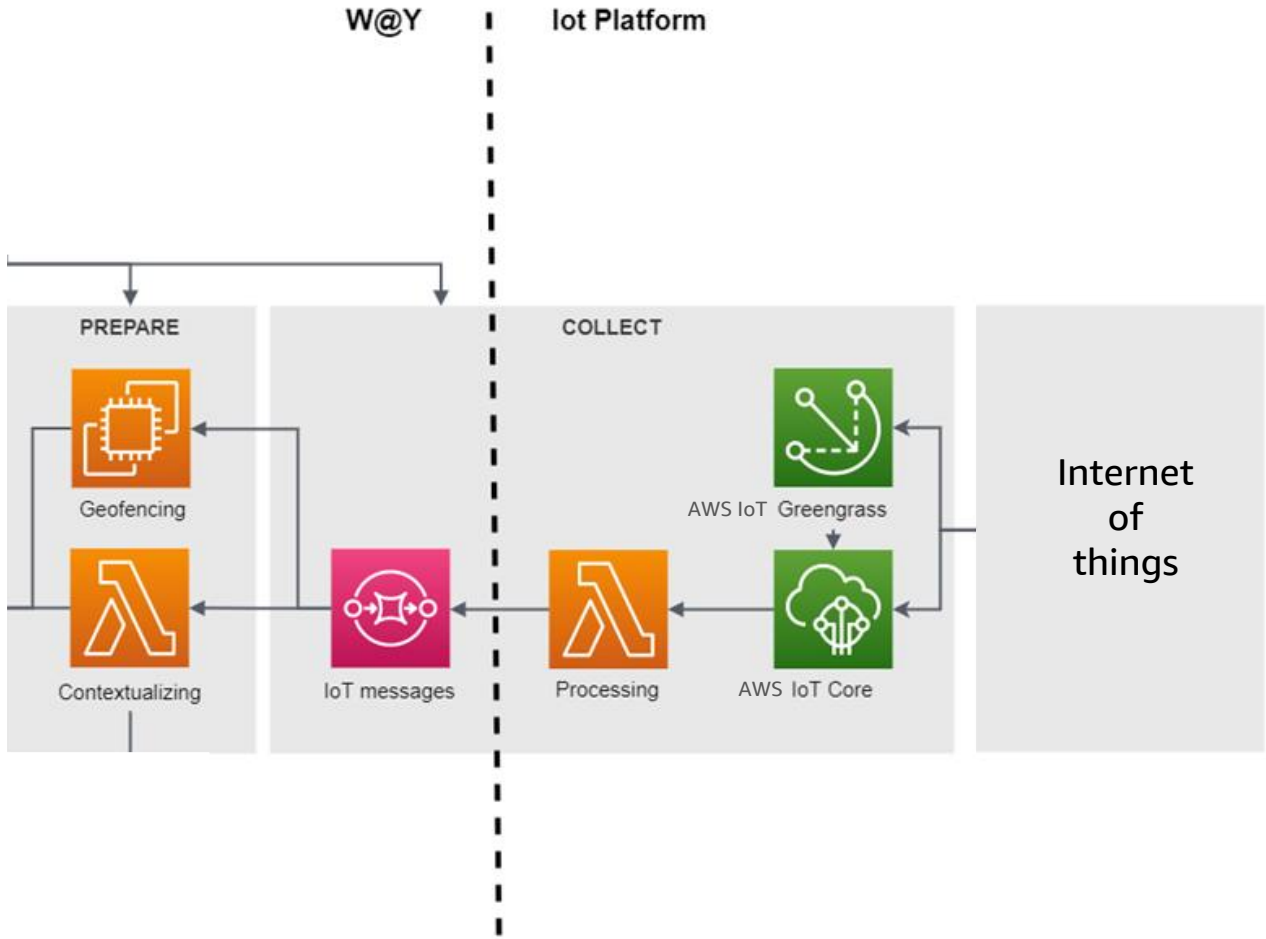
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Architecture

Data preparation

Geofencing: link position and zone (hangar / plant) hosted on Amazon EC2

Contextualization: retrieve forecast planning data with AWS Lambda functions



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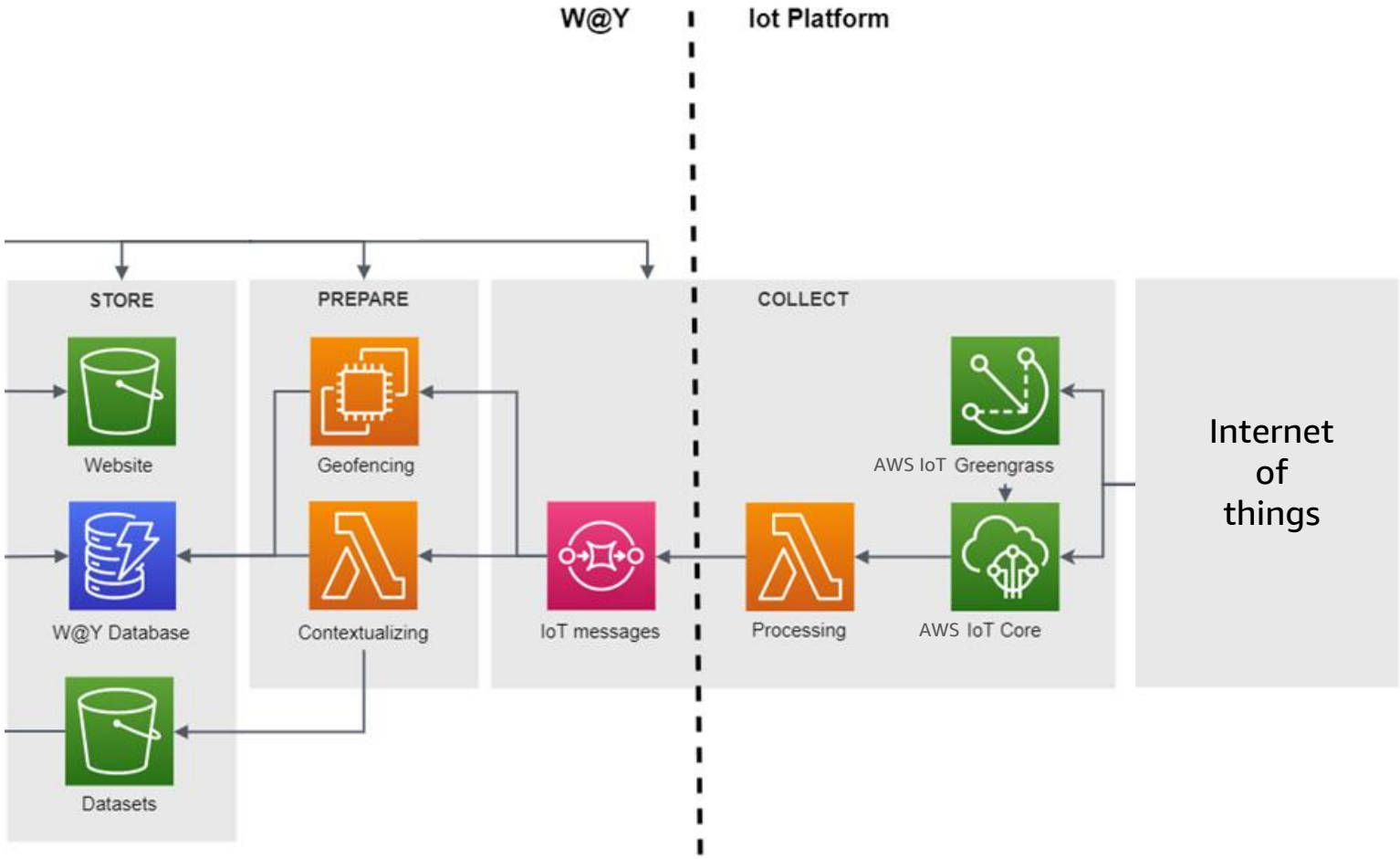
Architecture

Storage

Amazon S3: website

Amazon DynamoDB: contextualized data

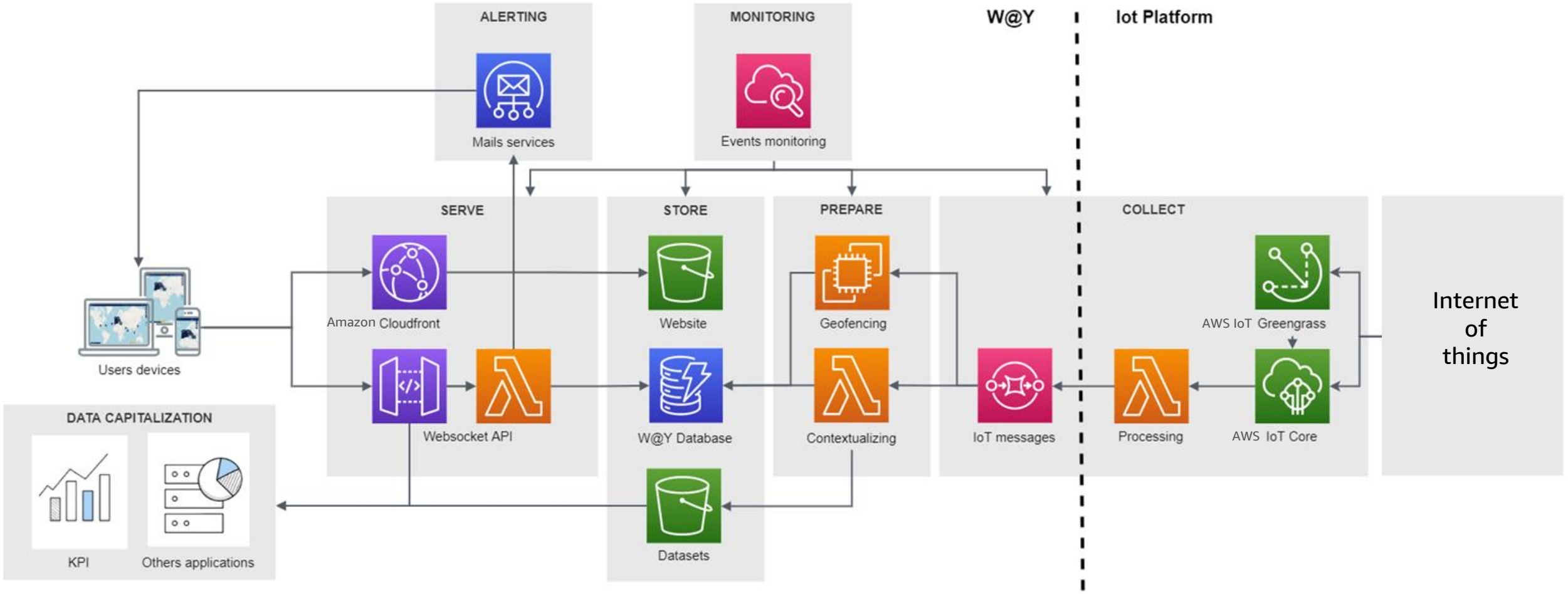
- Ability to support multiple and scalable reads and writes
- Cost



AIRBUS

Architecture: Publication

Almost 100% serverless – AWS manages the infrastructure and its support
Data made available to the Airbus data lake



AIRBUS

Challenges addressed

- Building: secured, robust, effective, efficient
- Scaling up (growth of tracked assets, use cases)
- Build AWS skills (internal and external)
- Device lifecycle management

AIRBUS

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Success factors

- Development of a global platform: cybersecurity, network, and user identity management
- An enterprise platform that manages IoT
- Team organization in DevOps mode

AIRBUS

Challenges addressed

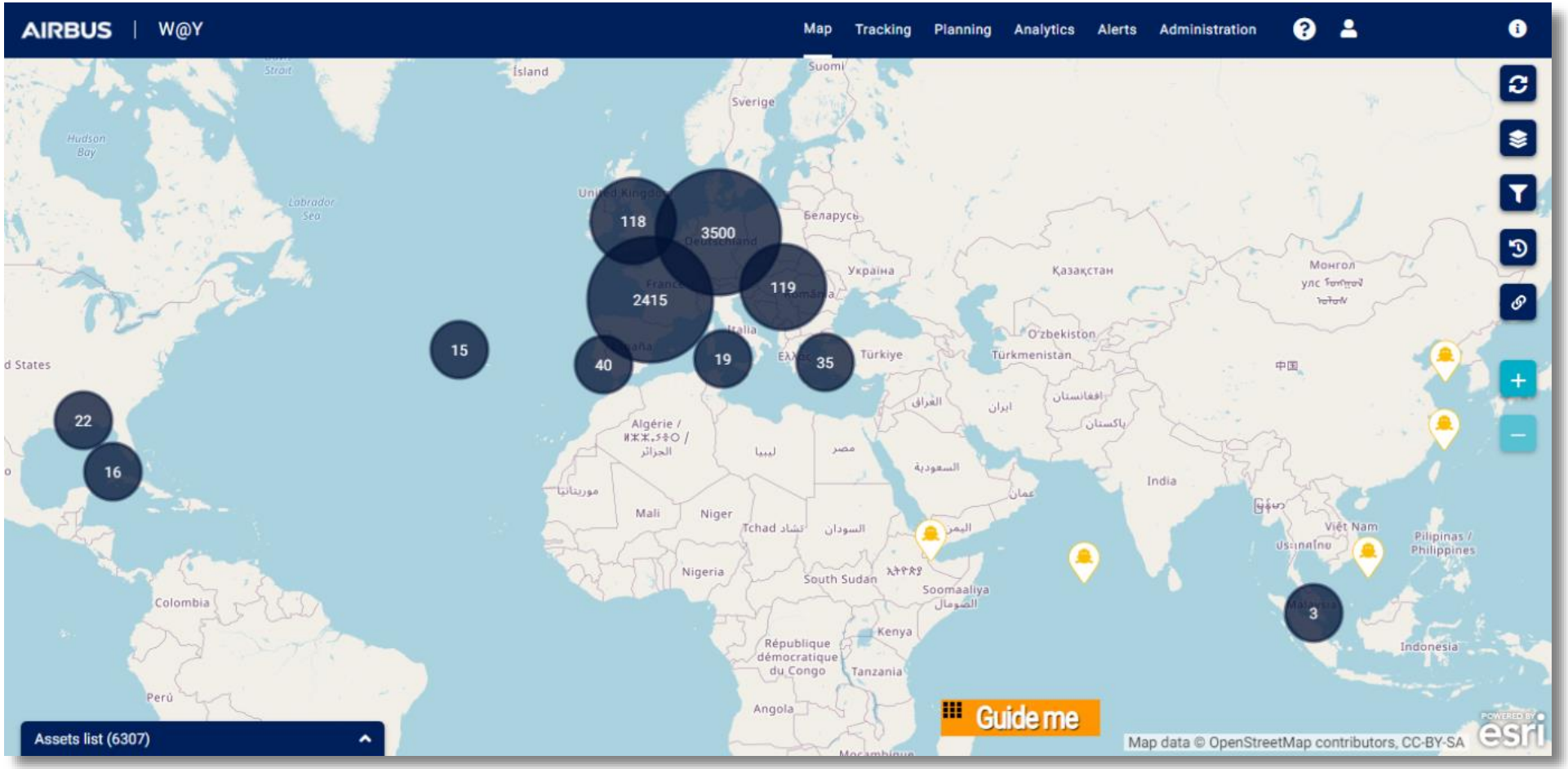
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Feedback

- Support from AWS and partners
- Take time to stabilize the foundations and define the target architecture
- Agility and infrastructure-as-code enables iteration



Today

✓ End-to-end supply chain optimization

✓ From 7,000 to 17,000 assets tracked worldwide in 2 years

✓ Performance indicators and data analysis

Tomorrow

New uses:

- Containers status
- Freezers

Predictive algorithms

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Samsung

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About Samsung Electronics

WORLD'S LARGEST ELECTRONICS MANUFACTURER



Mobile Phones

TV

Refrigerators

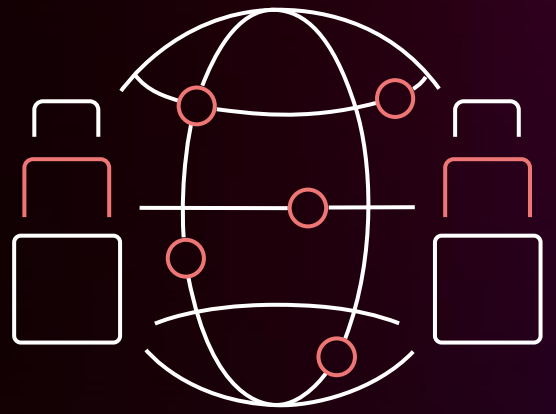
Washing machines

…

SAMSUNG

32

Production sites



52

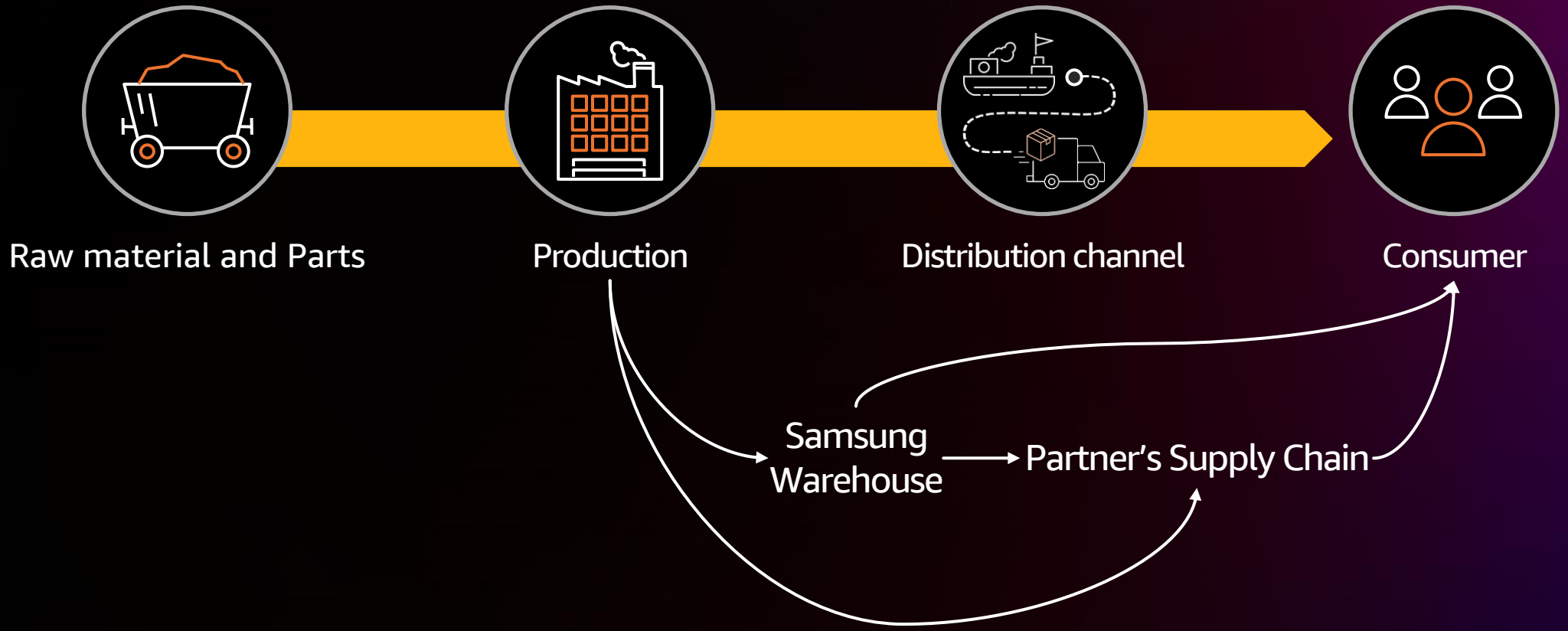
Sales offices

74

Countries

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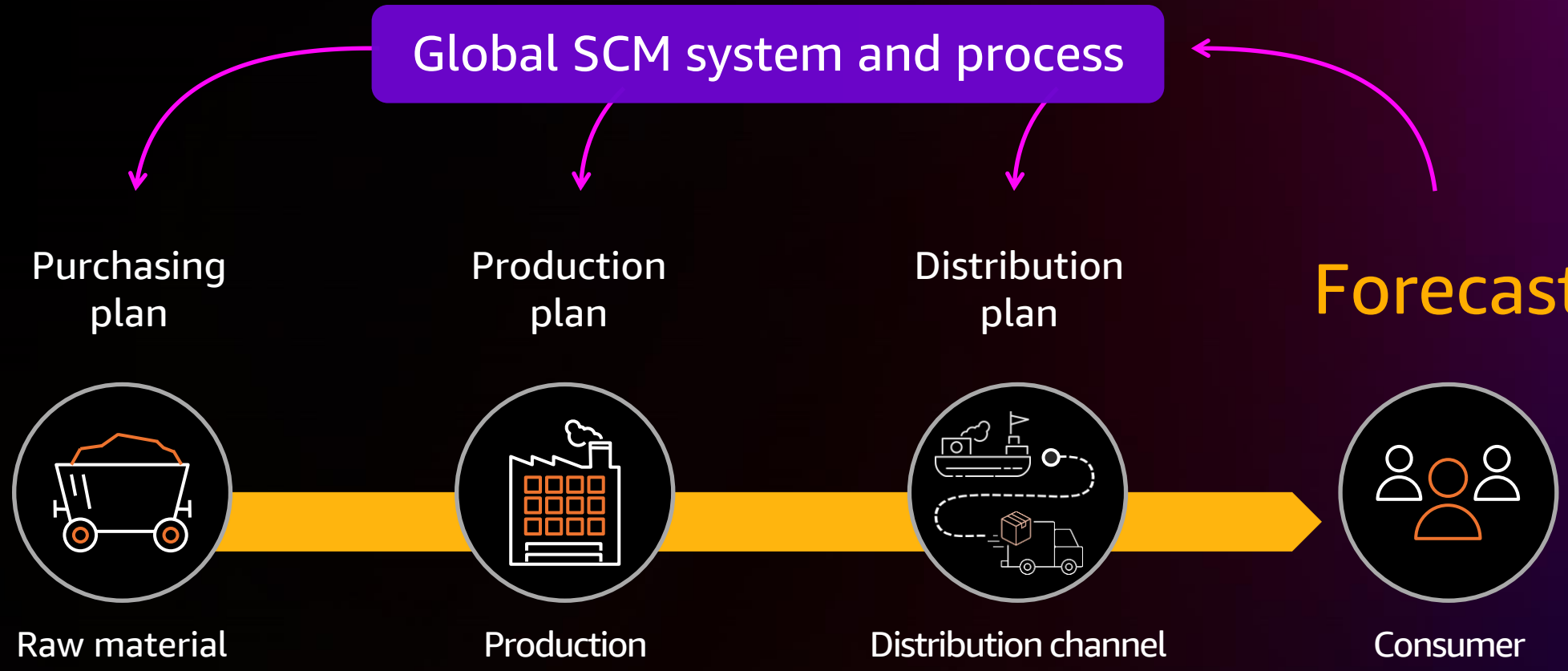
Samsung Supply Chain



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Forecasting

THE PROCESS OF MAKING PREDICTIONS OF THE FUTURE BASED ON PAST AND PRESENT DATA



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Samsung's forecasting journey

SELL IN FORECAST

Samsung to distribution channel

SELL OUT FORECAST

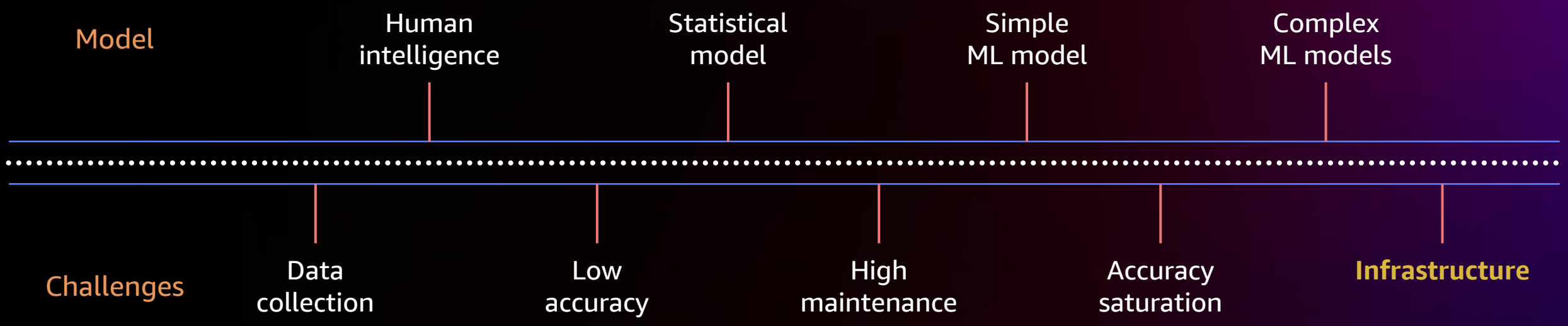
Distribution Channel to consumer

Supply-driven	**Market-driven**
Small data	**Big data**
Human intelligence	**Artificial intelligence**

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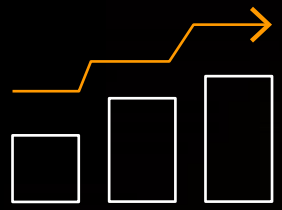
Samsung’s forecasting journey

SELL OUT FORECASTING



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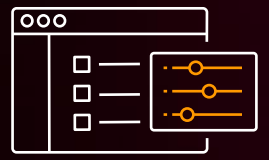
Why we moved to cloud



Performance



Scalability



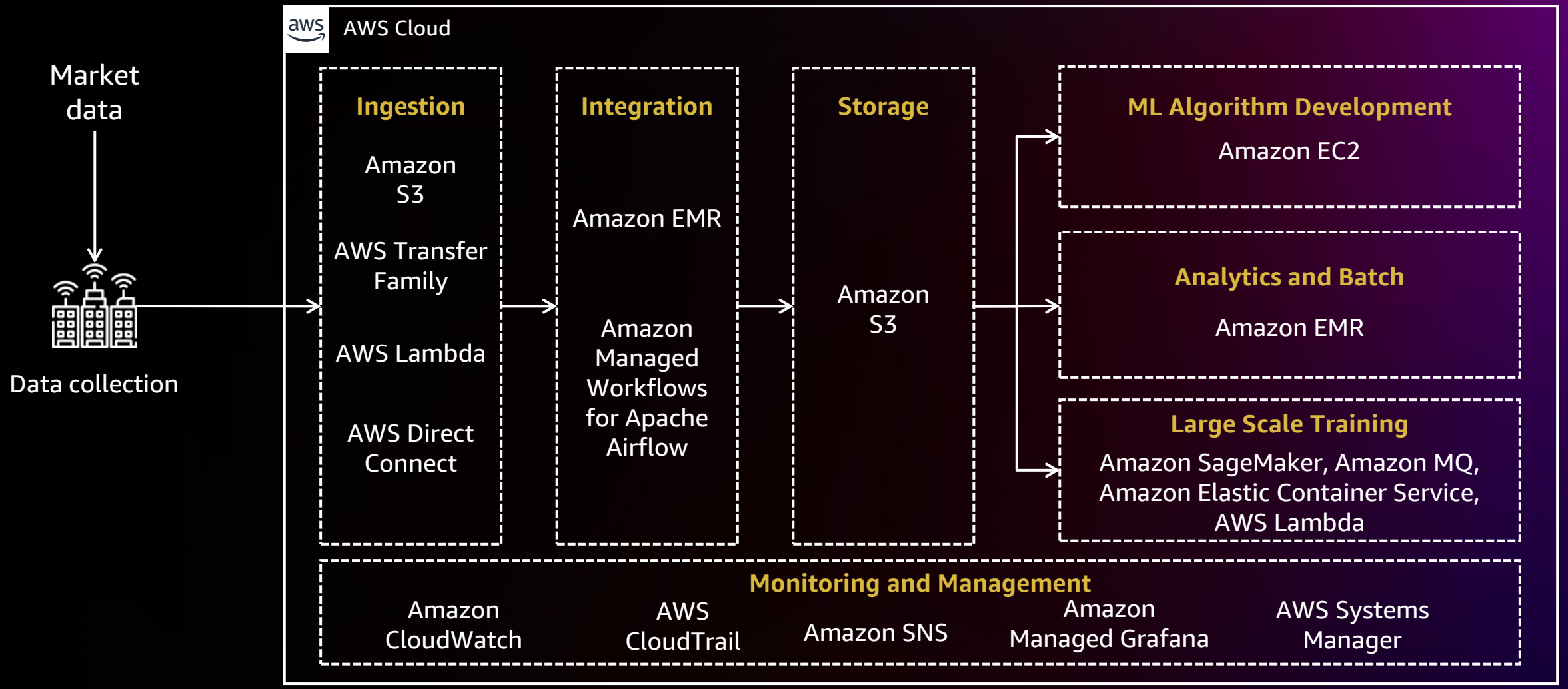
Reliability



Cost

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Cloud architecture – Big picture

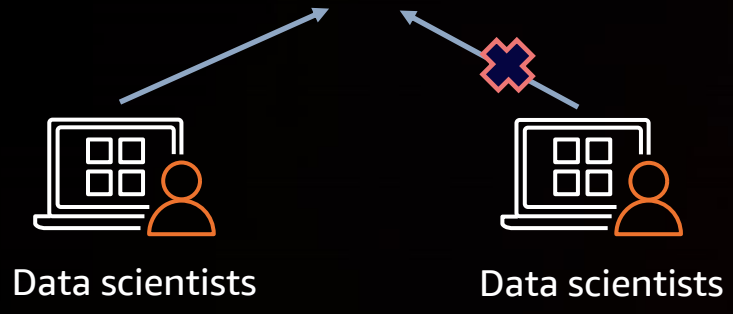


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AWS services used – Amazon EC2

AS WAS

On-premise platform



Limited hardware options

Limited capacity

High and fixed cost

AS IS



Variety of hardware options

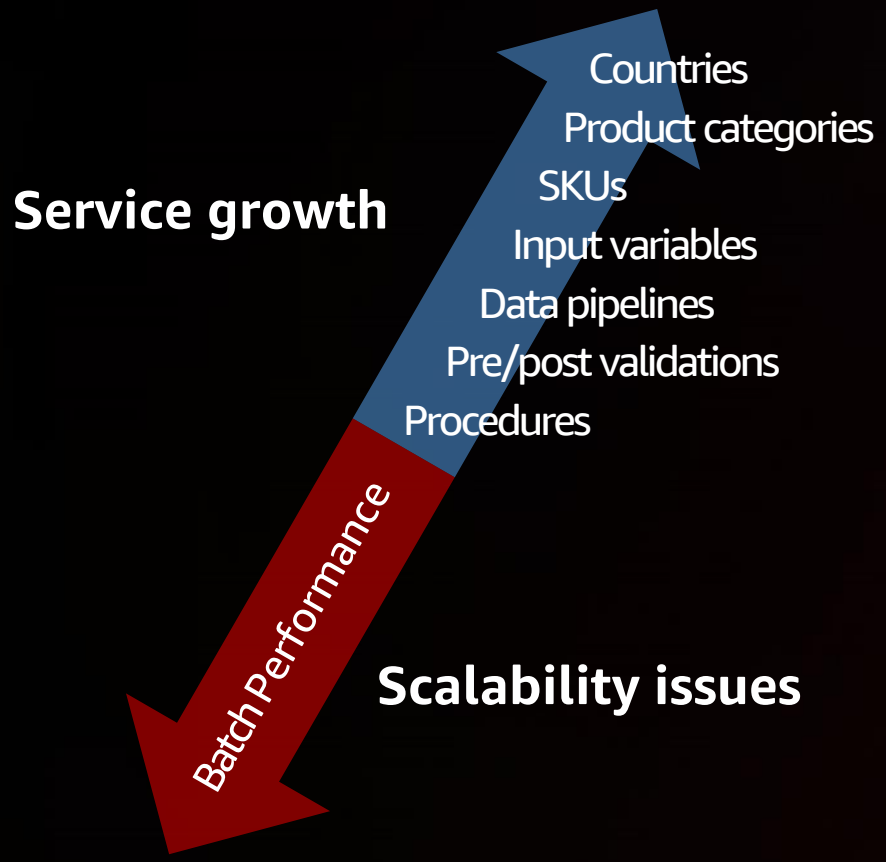
Unlimited capacity

Pay-as-you-use

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AWS services used – Amazon EMR

AS WAS



AS IS

Amazon EMR

Auto scaling

On-demand and Spot instances

Custom AMIs

Dedicated transient cluster for heavy batches

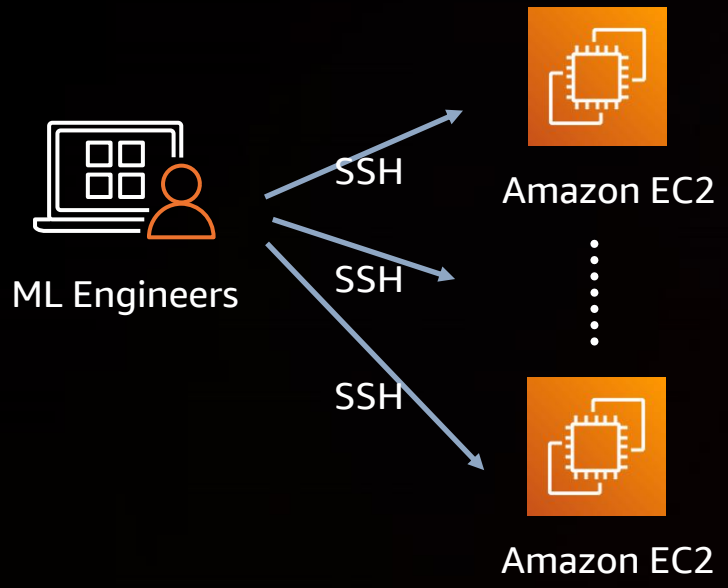
Parallel scheduling

Tuning and optimization

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AWS services used – Amazon SageMaker

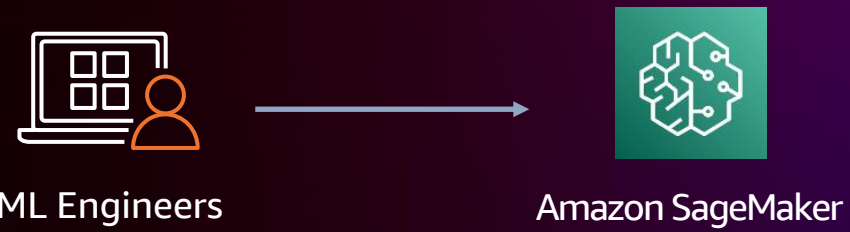
AS WAS



Repetitive manual work

Manual retraining

AS IS



Less training time

Easy monitoring and retraining

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The results

Accuracy improvements

Automated forecasting operation

Lower stock-out, revenue growth

70% Less ML training time

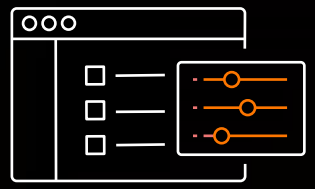
50% Cost reduction for Spark

0.5 Day to test new architecture

0 Worries about infrastructure

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The future



Explainability



Simulation



MLOps



DataOps

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Thank you!



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