
AWS
re:Invent

MFG302

Hyundai builds smart services for their connected machinery

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AWS

Agenda

Smart product introduction

Hyundai

- Introduction
- Cloud journey
- Smart service journey
- Result, review, and future plan

Digital manufacturing

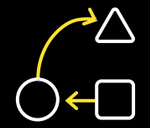
Data-
driven decisions

Real-
time insights

Increased
efficiency

Customer
experience

Products that get
better with time



New services and
business models

Operational efficiency

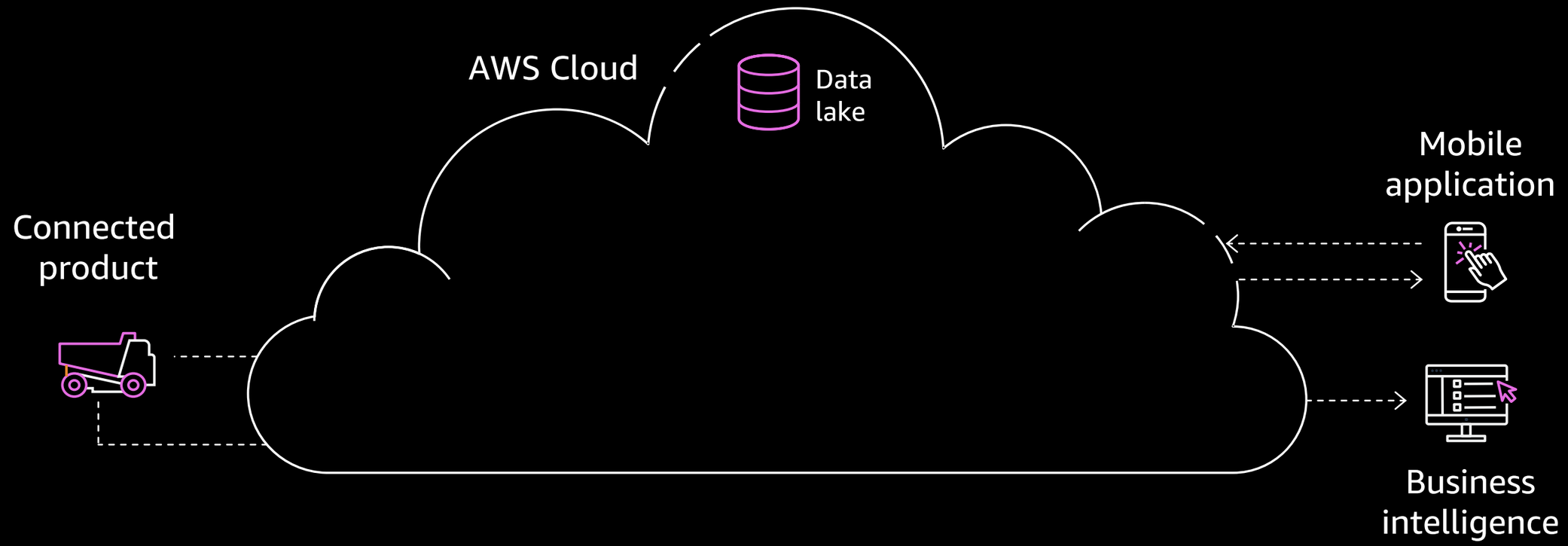
Operations-data insights decreases OpEx

Revenue growth

Field data drives business growth

Smart products and machines

CAPABILITIES



Smart products and machines

USE CASES

As a service

Product optimization

Customer engagement

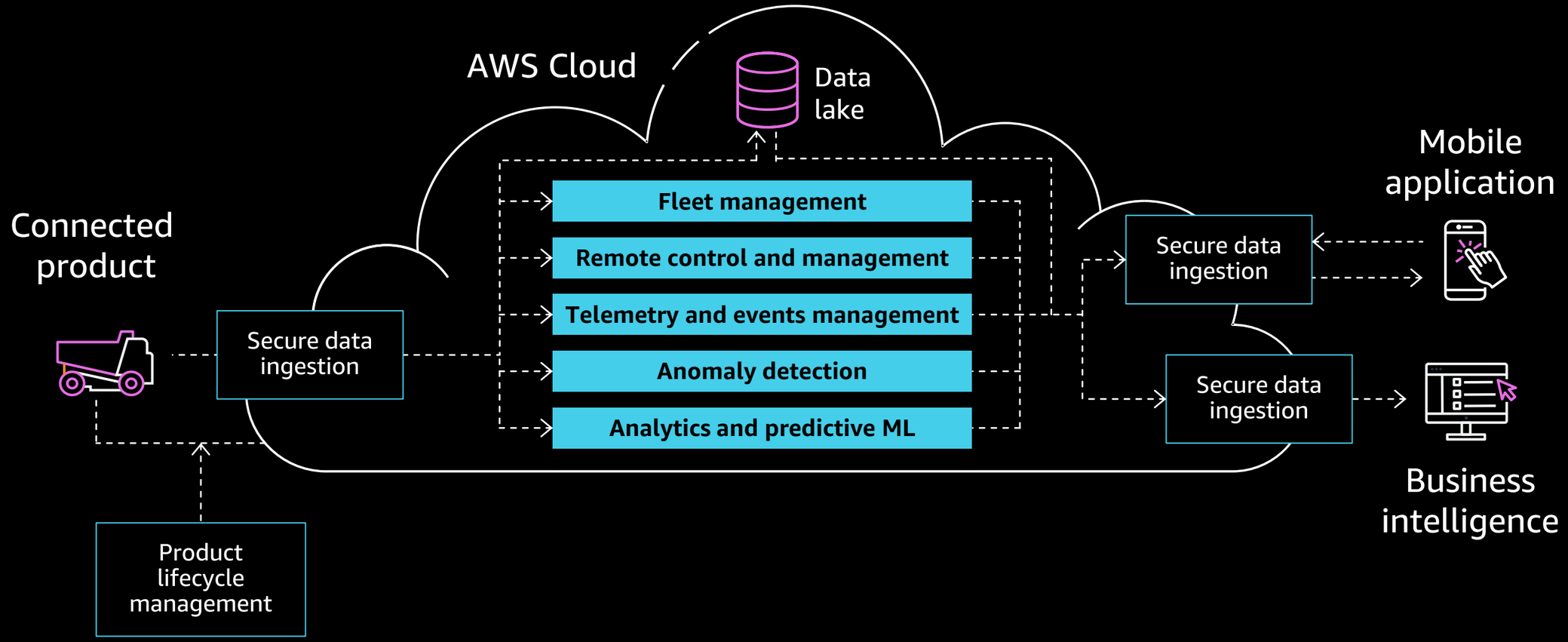
Smart products and machines

CAPABILITIES

As a service

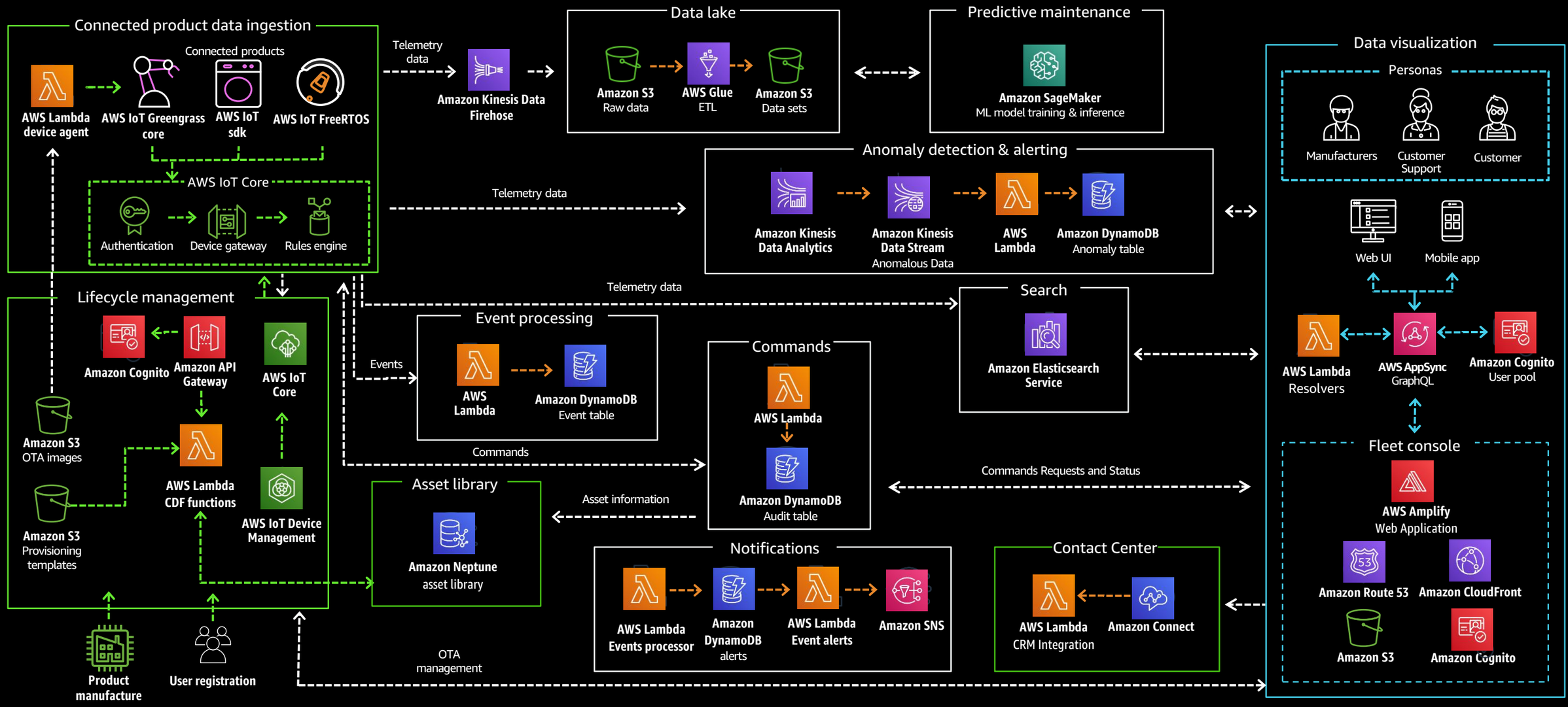
Product optimization

Customer engagement



Smart products and machines

REFERENCE ARCHITECTURE



Hyundai

AWS re:Invent

Introduction

HYUNDAI
CONSTRUCTION EQUIPMENT

Manufacturer of construction equipment and industrial vehicles

- HQ located in Korea
- Regional branches in US, EU, India, Brazil, and China
- 540 local distributors in 150 countries

Smart solution

HYUNDAI CONNECT

HiMATE
for CONNECTIVITY

HiASSIST
for PRODUCTIVITY

HiDETECT
for SAFETY

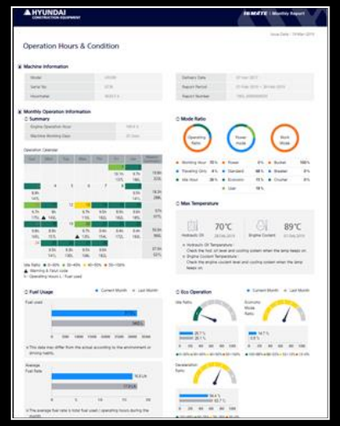
Smart solution

HiMATE

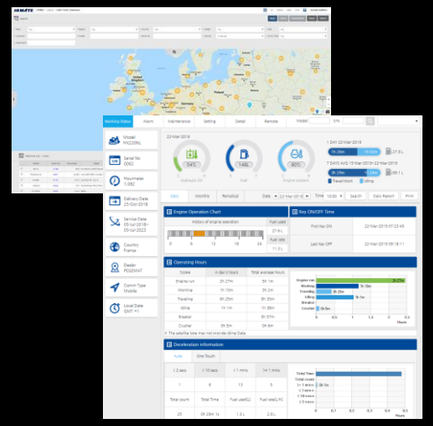
Fleet monitoring and management solution

Expending platform and application rapidly

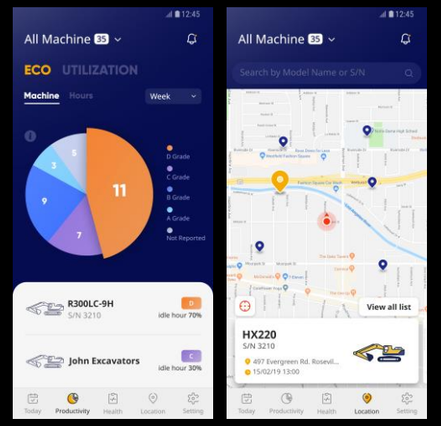
FLEET REPORT



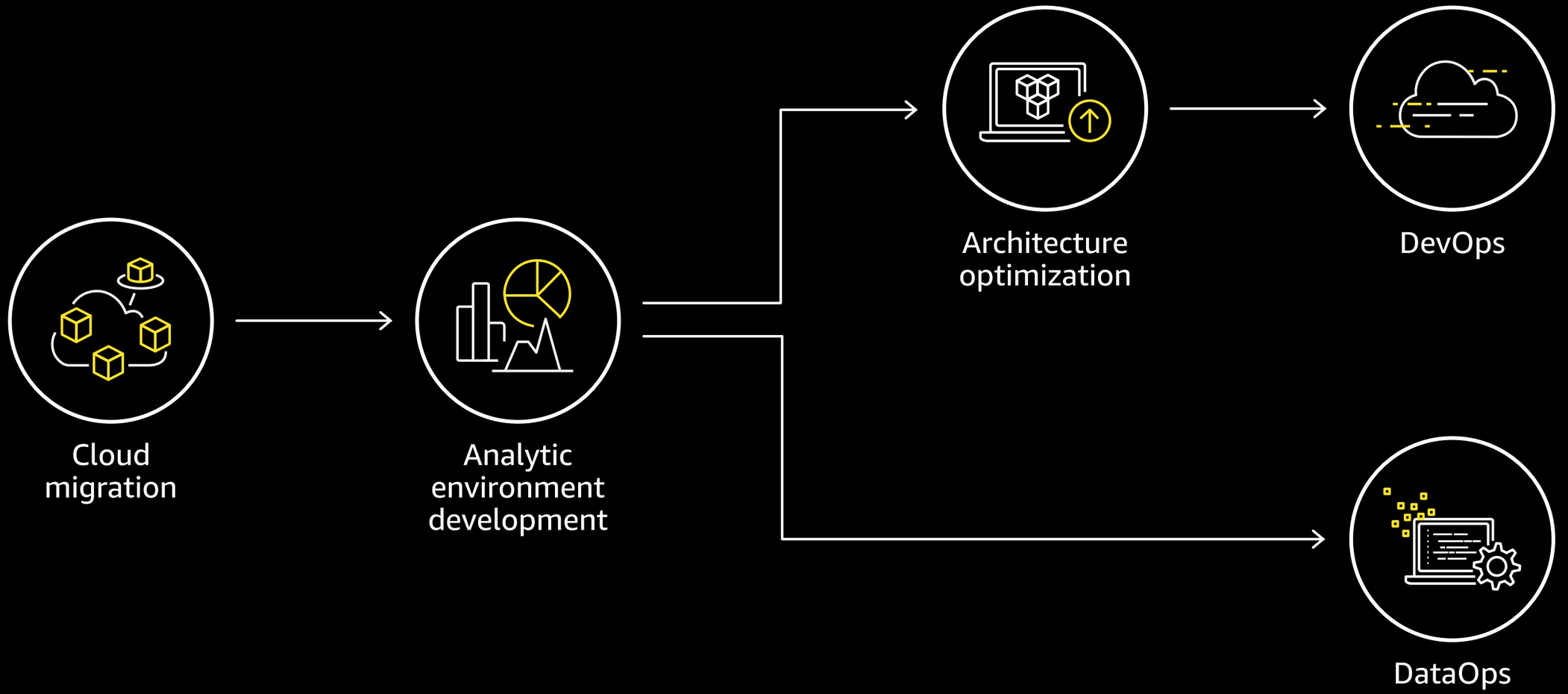
WEB



MOBILE APP

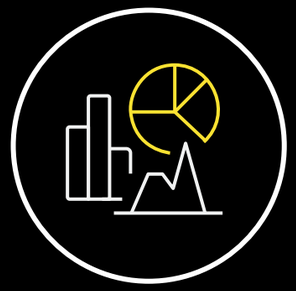


Cloud journey

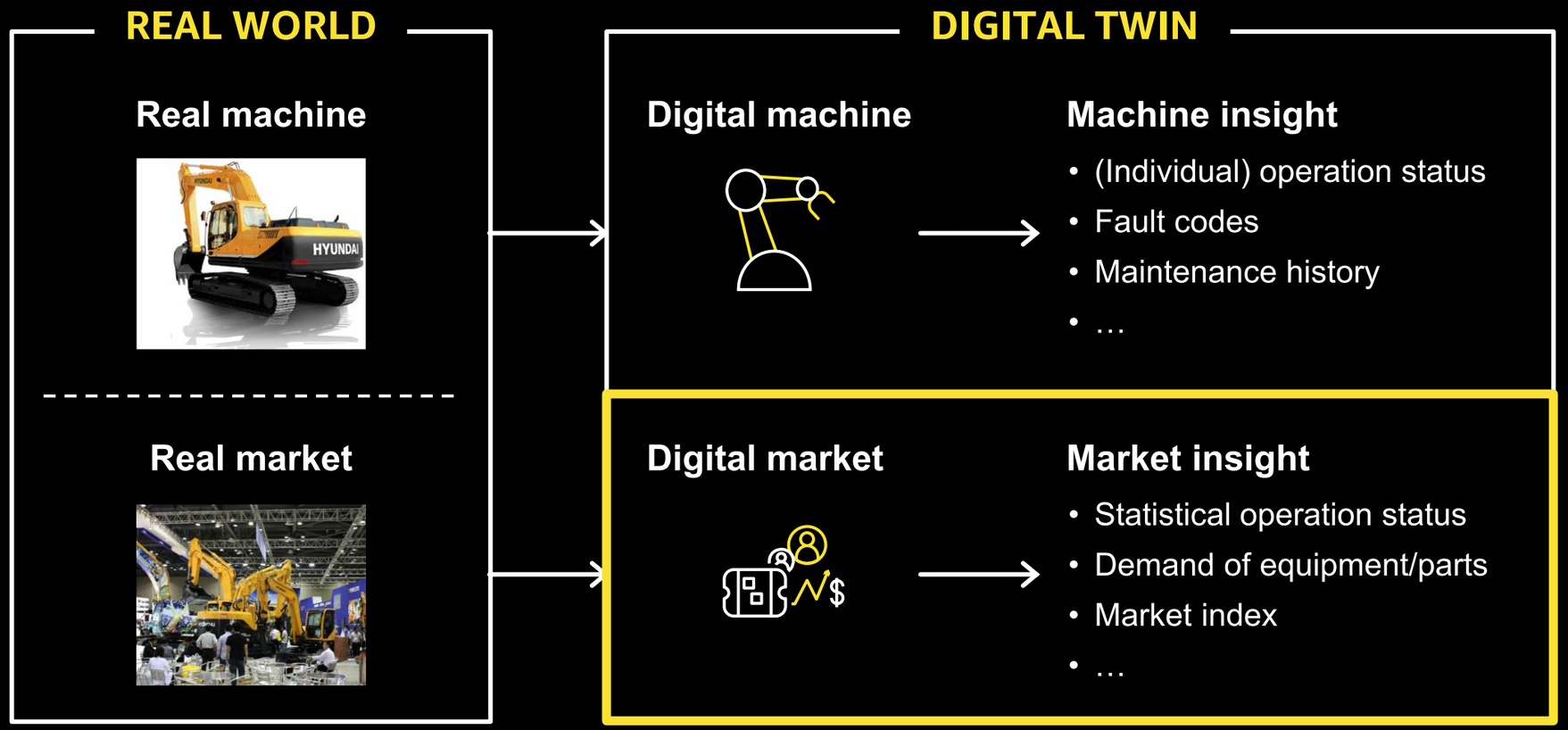


Cloud journey

ANALYTIC ENVIRONMENT DEVELOPMENT



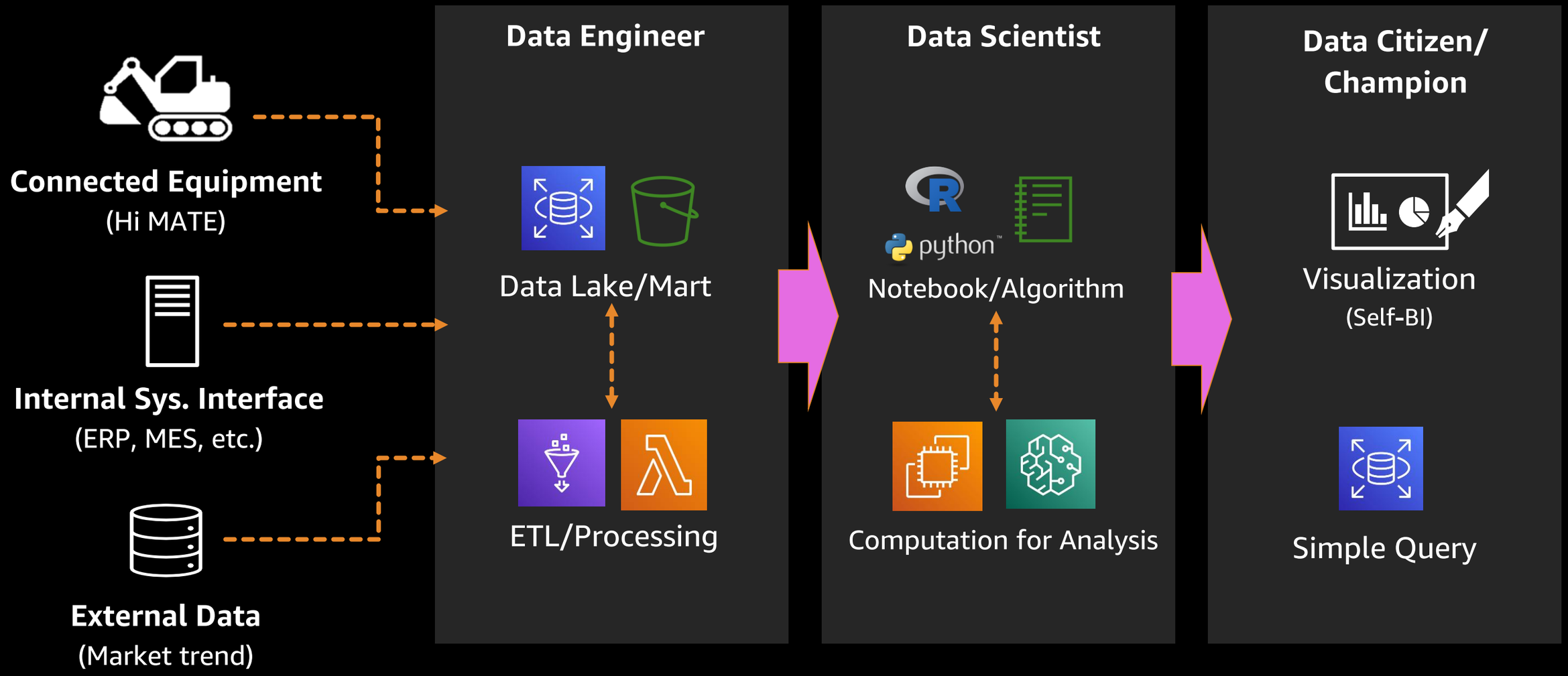
Start to set up
“digital market model”



Later, “a sandbox for data analysis”

Cloud Journey

ANALYTIC ENVIRONMENT DEVELOPMENT



Cloud Journey

ANALYTIC ENVIRONMENT DEVELOPMENT

“Digital Market Model”

Analysis for Business

- Product Analysis
- Market Forecast
- Quality Evaluation
- ⋮

Analysis for Customers

- Fleet Statistics
- Cost Analysis
- Downtime Analysis
- ⋮

→ *“A Sandbox for Data Analysis”*

Cloud journey

LESSON AND RESULT

Through cloud journey…

 — Efficient operation from scalable service

 — Acceleration of development

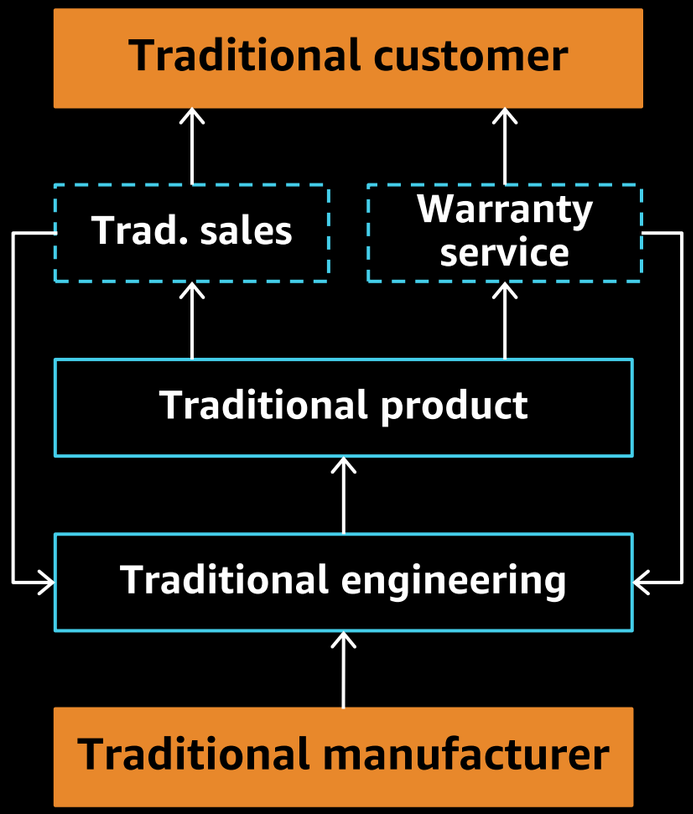
 — Minimizing limitation of IT resource

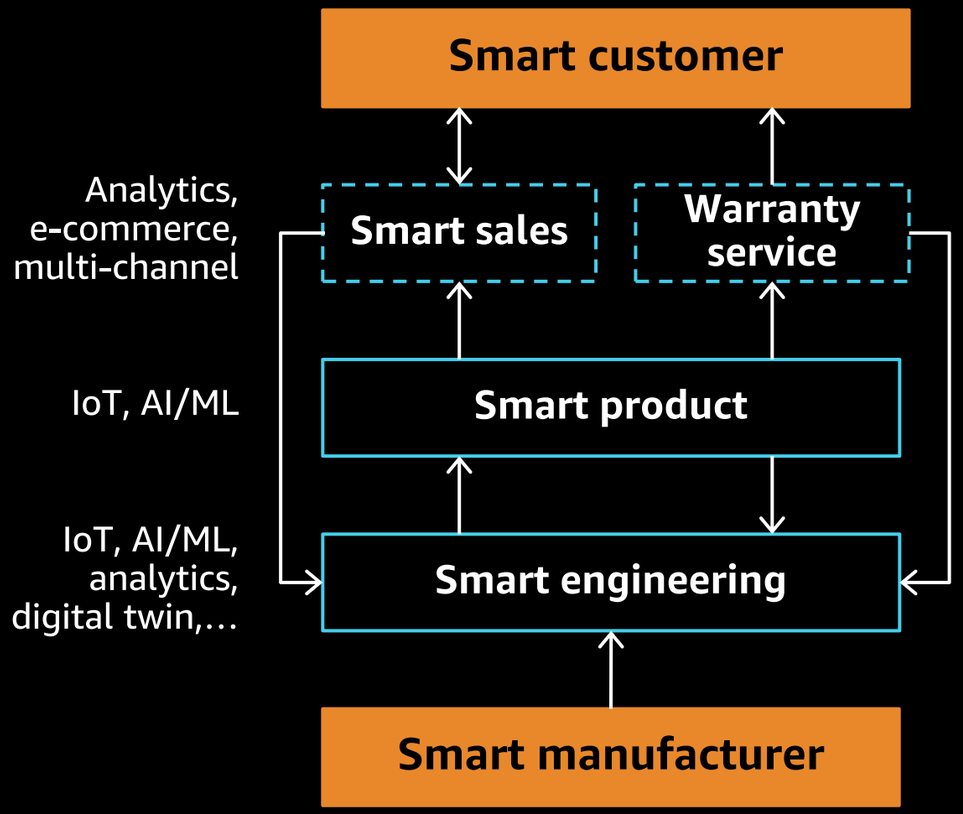
 — Continuous innovation

“Special approval is required for cloud migration.” → **“Why don’t you just build in the cloud?”**

Smart service

TRADITIONAL MANUFACTURING VS. SMART MANUFACTURING



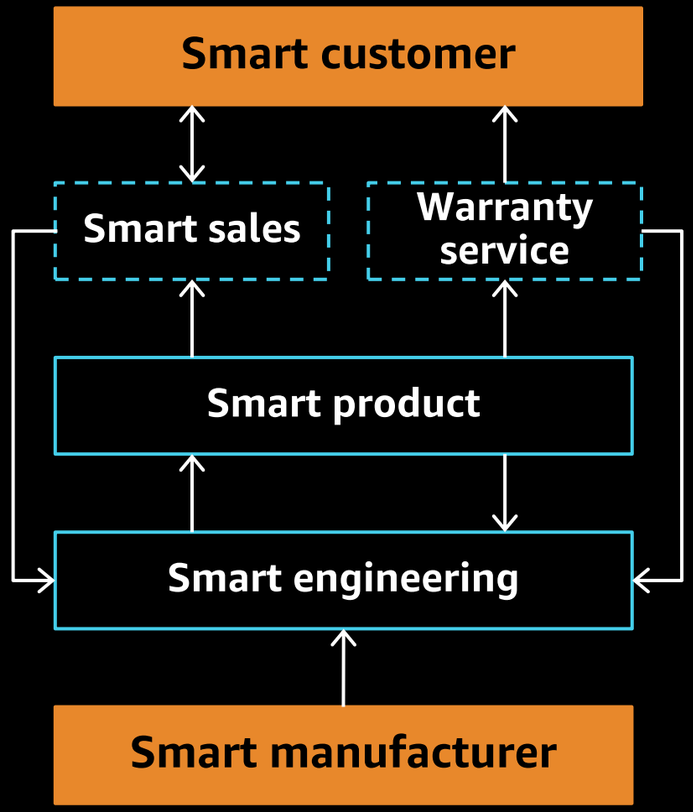


Traditional manufacturing

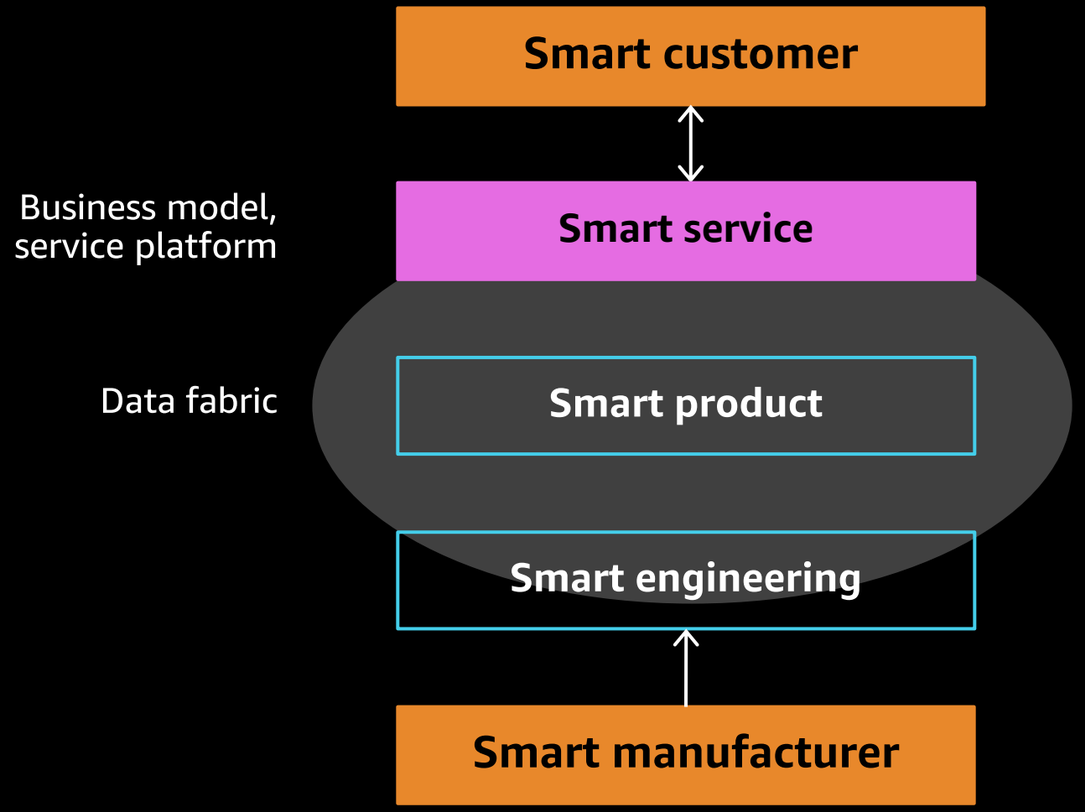
Smart manufacturing

Smart service

SMART MANUFACTURING VS. SMARTER MANUFACTURING



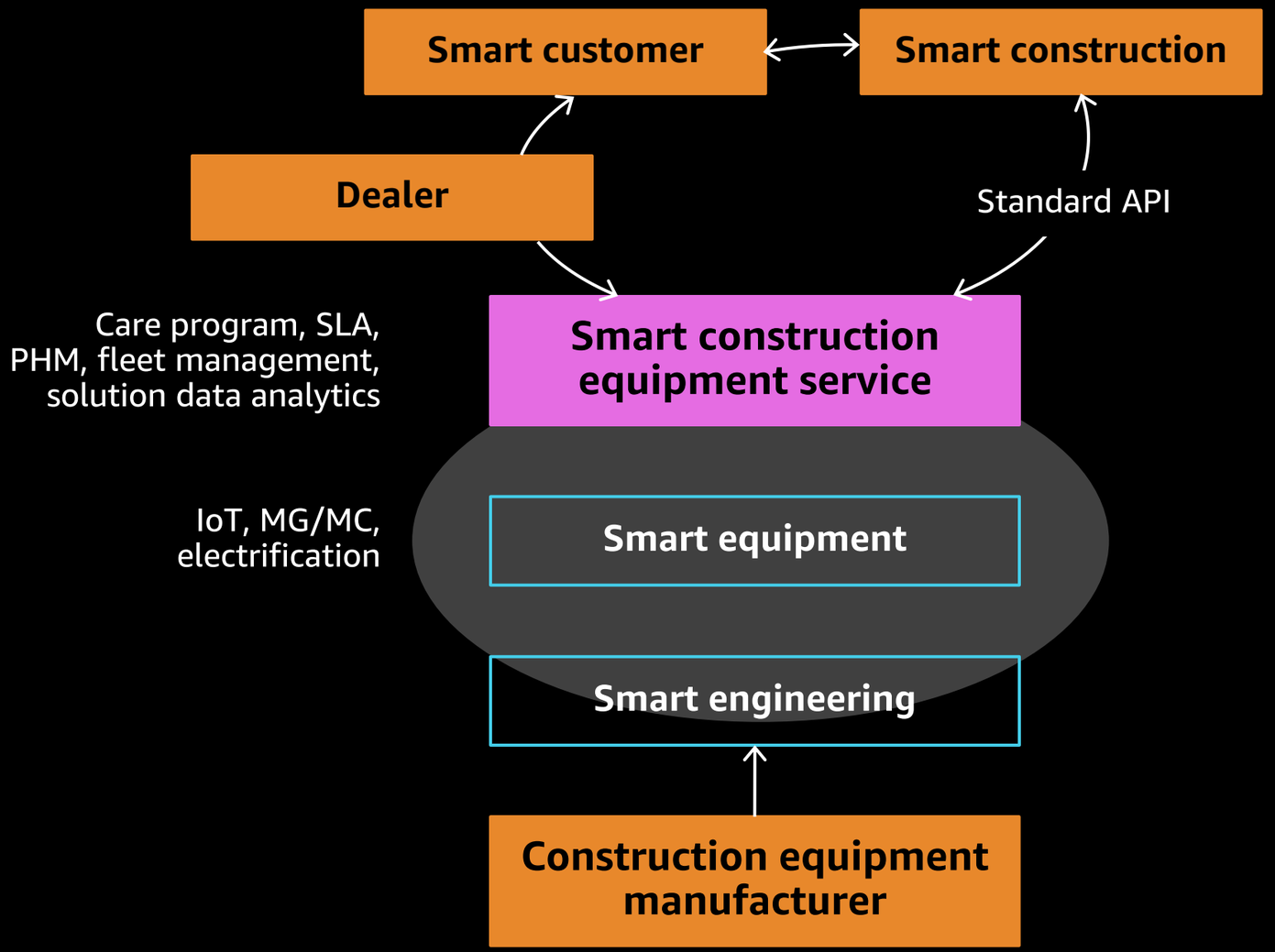
Smart manufacturing



Smart manufacturing and smart service

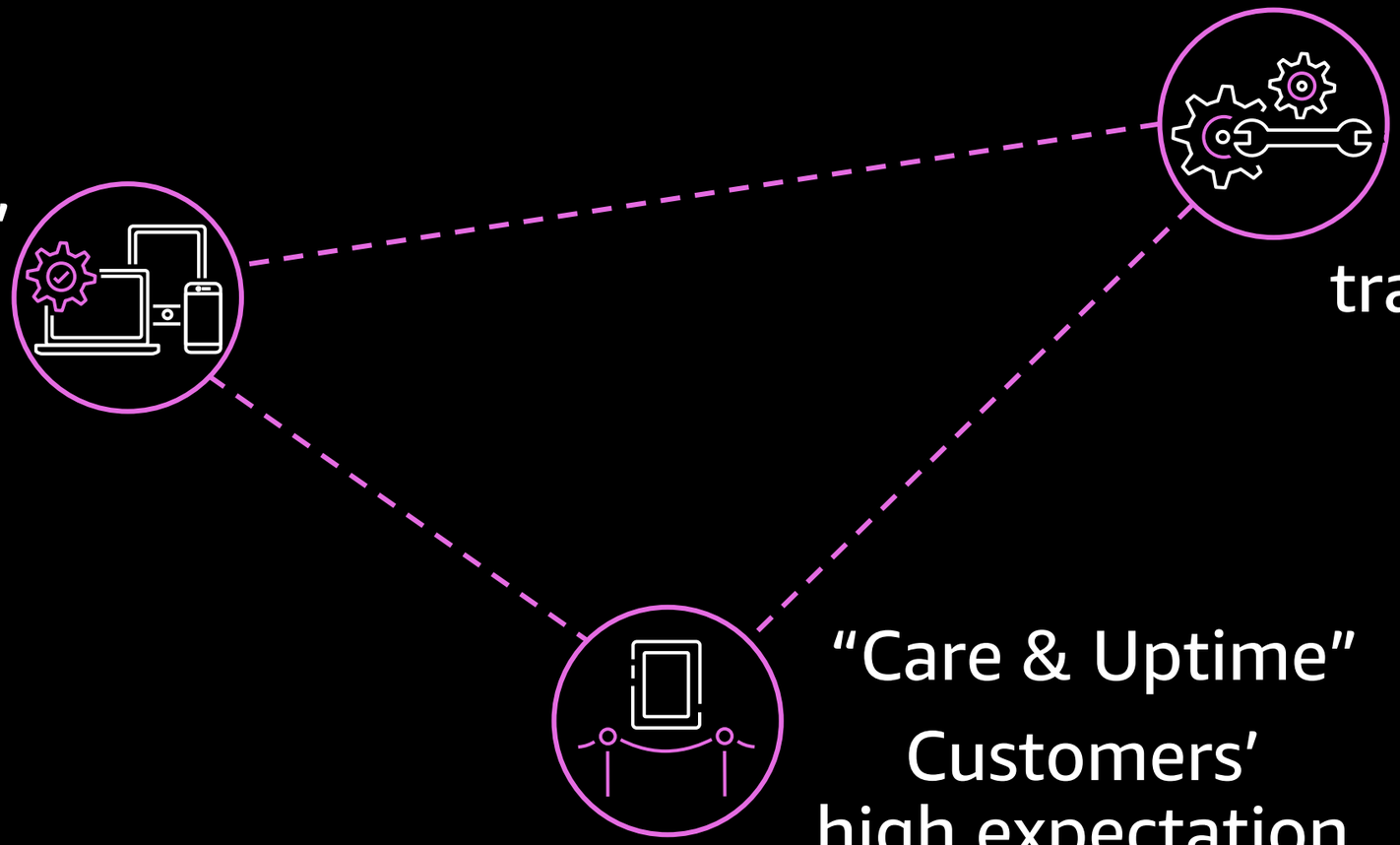
Smart service

SMART CONSTRUCTION EQUIPMENT AND SERVICES



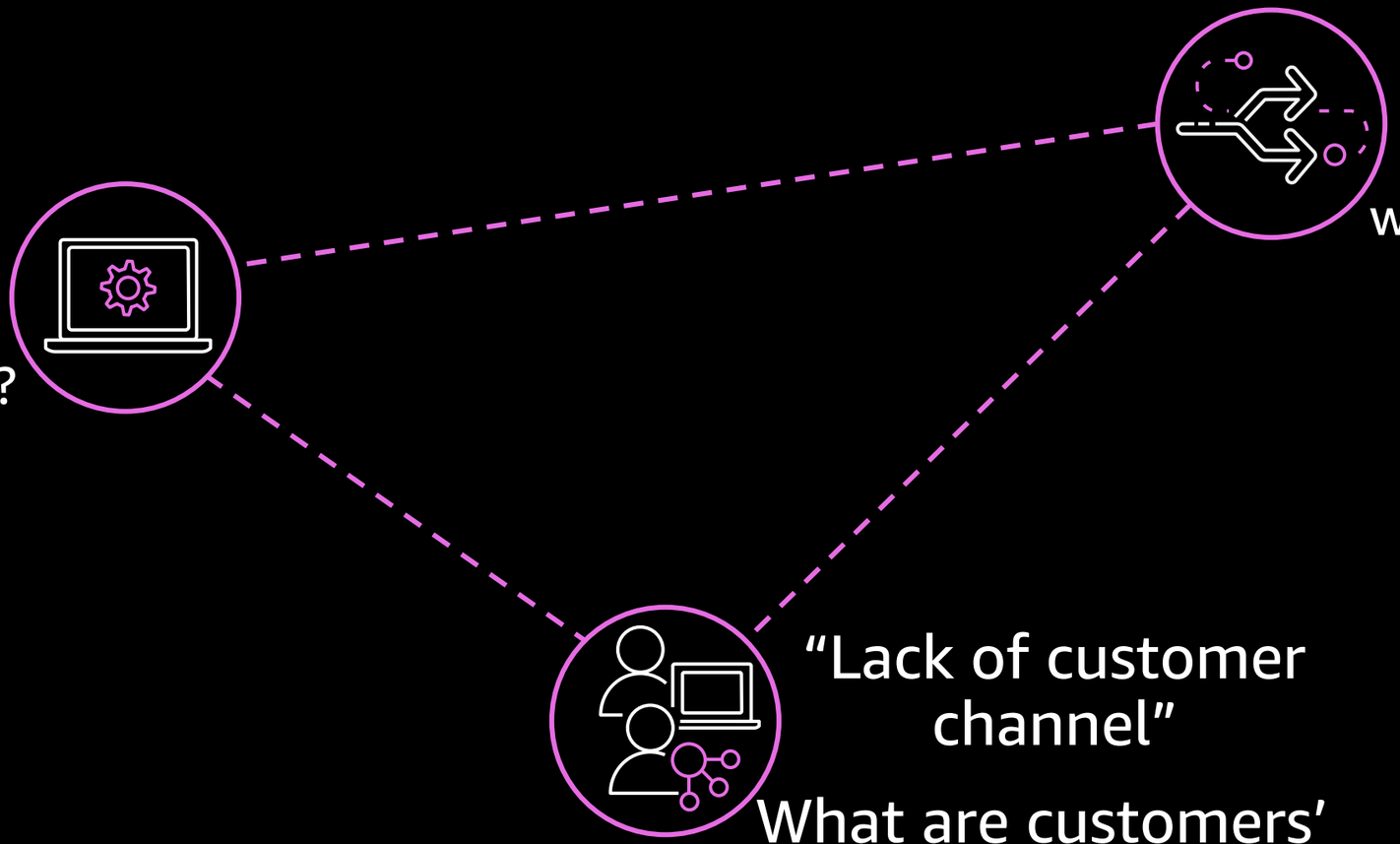
Smart service

WHY A MANUFACTURER OFFERS SMART SERVICE?



Smart service

PAIN POINTS TO BUILD SMART SERVICE



“Lack of resources”

How can we get
the right digital solution?

“Easy to fall into
the silo effect”

How to integrate
with current services?

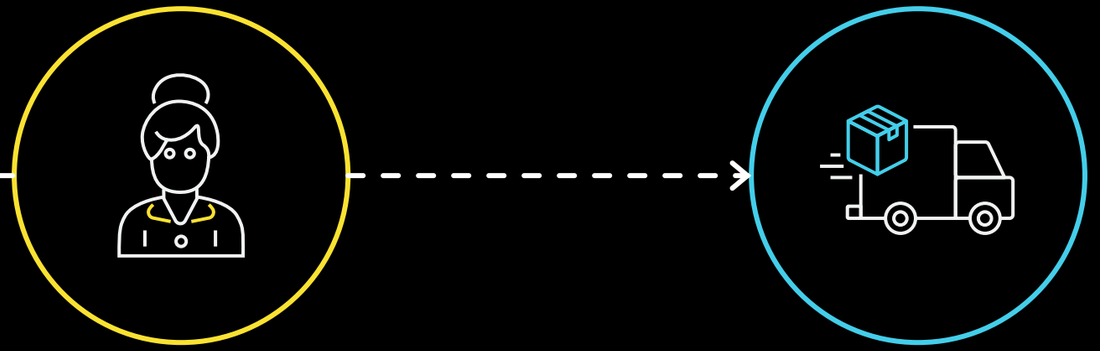
“Lack of customer
channel”

What are customers’
true needs?

Working backwards

AWS Digital Innovation Program

Working
backwards process



Customer

Product/service

Working backwards

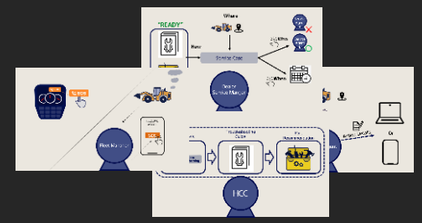
DIGITAL INNOVATION WITH AWS

Working Backwards Workshop

Customer Journey

Press Release

FAQs



Visuals

Solution Workshop

Requirement & Components

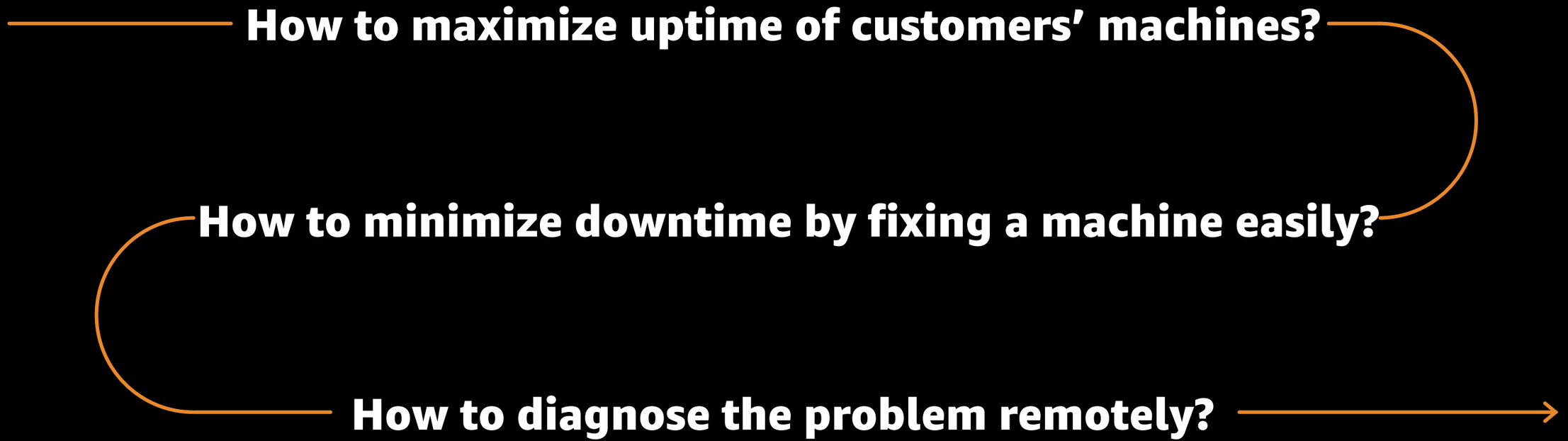
Prototype Scope

with AWS

without AWS

Working backwards workshop

KEY BUSINESS PROBLEM



Prototyping journey

SUBJECT AND SCOPE

“Development of core AI/ML pipeline for smart services”

AI diagnostics

 — Inference and data gathering from the Edge

 — Training and monitoring in the Cloud

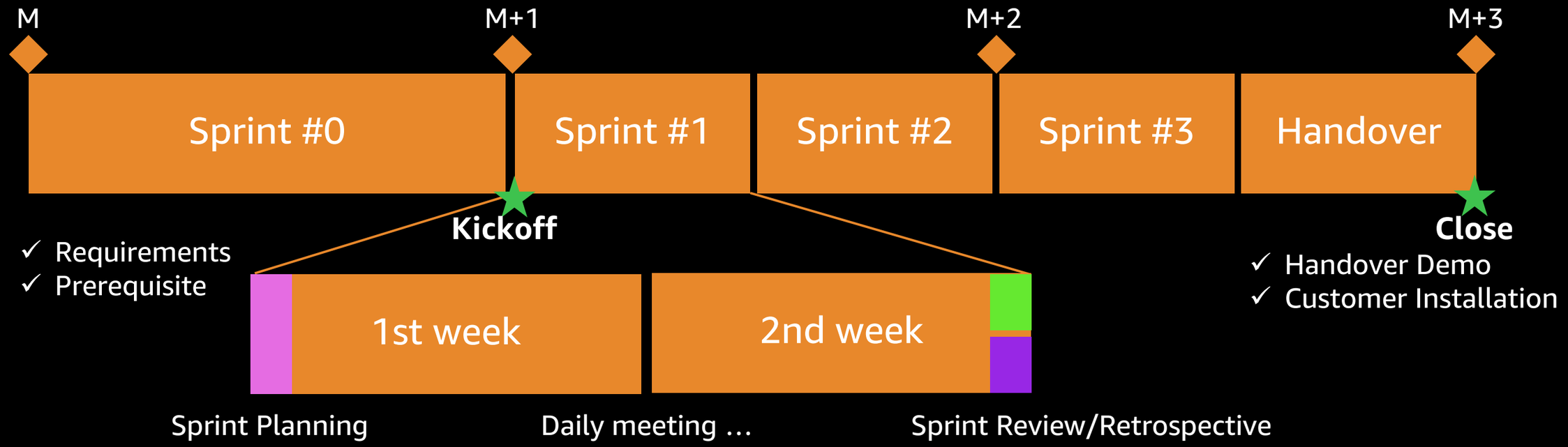
 — Model distribution from the Cloud to the Edge

Part recommendation

 — When fault occurs, machine learning prediction from continuous service data input

Prototyping journey

DEVELOPMENT PROCESS : SCRUM / SPRINT



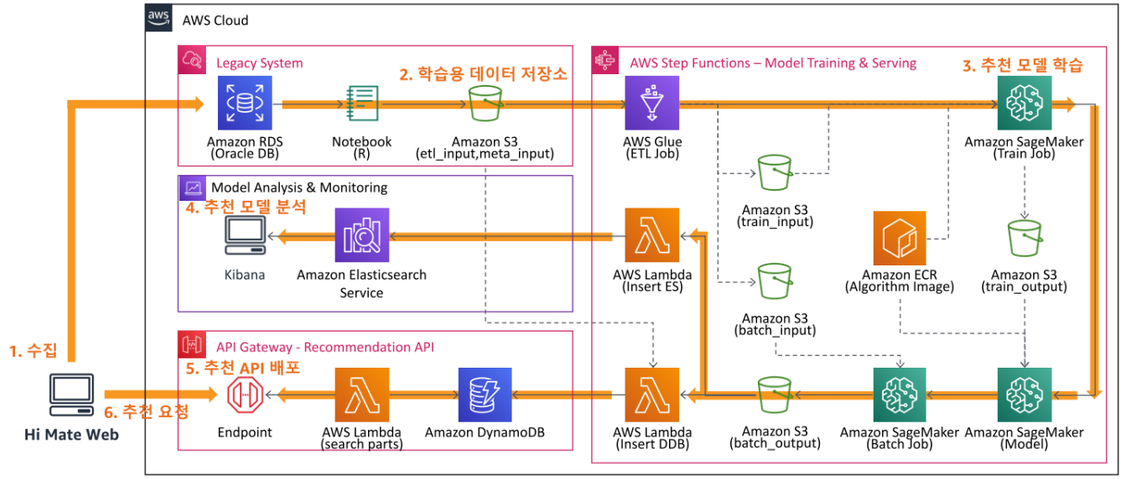
CROSS FUNCTIONAL, TWO PIZZA TEAM

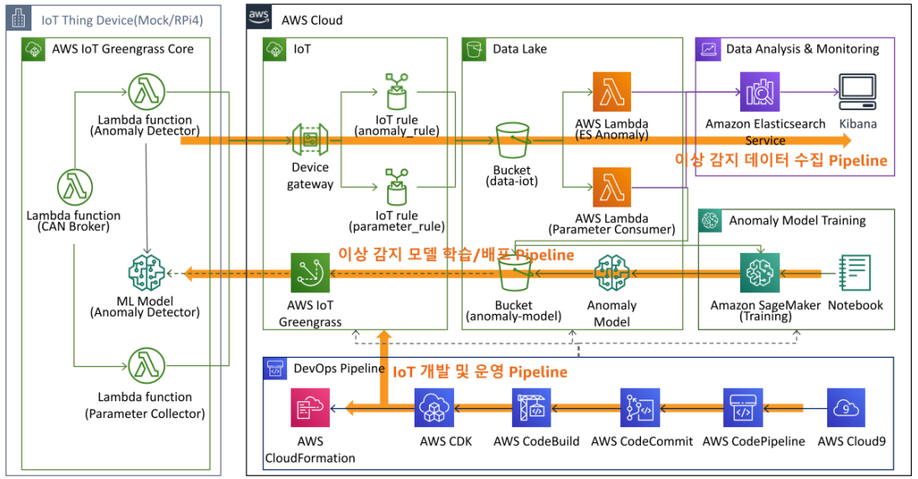
AWS (prototyping team) +
Hyundai CE (PM, data analyst, IT, and service technician)

Prototyping journey

OUTCOME

AI/ML diagnostics and part recommendation pipeline architecture





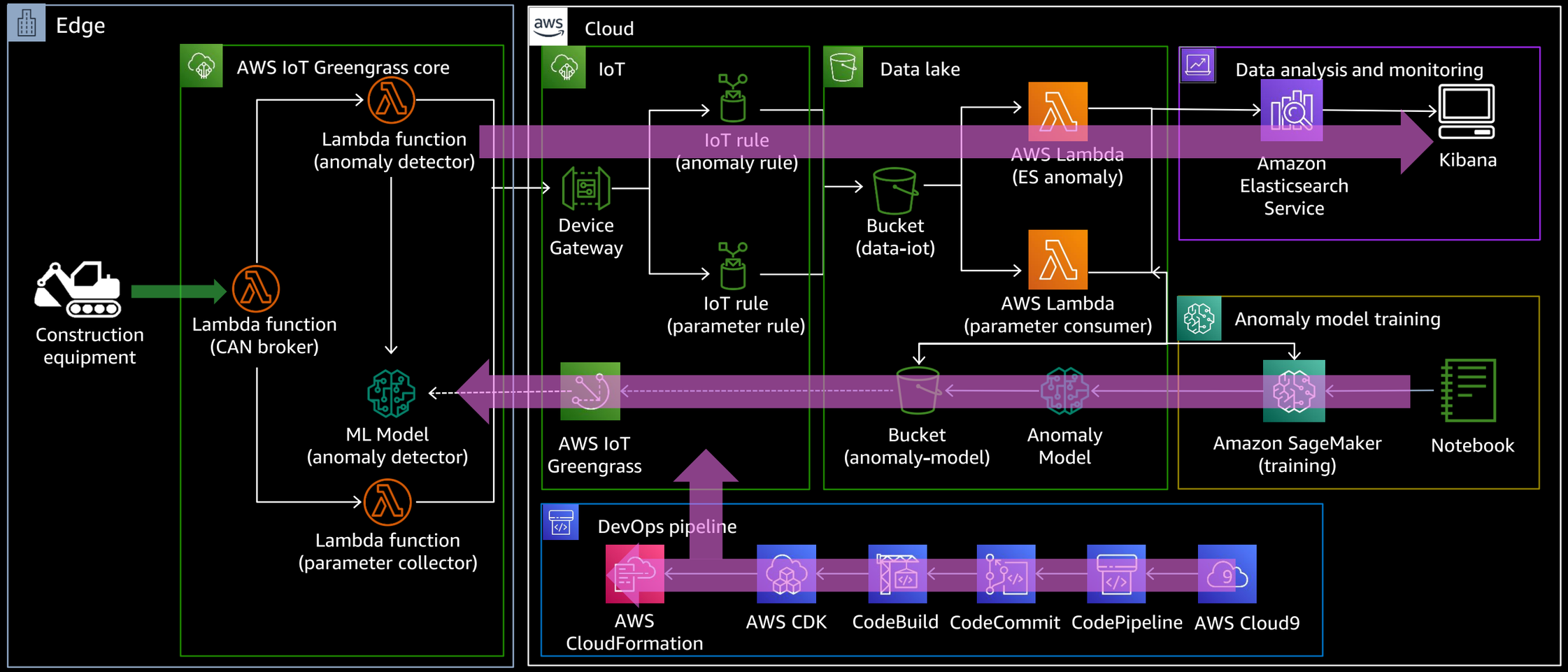
Automated AI/ML training/distribution/analysis/operation

- Data gathering and model training pipeline from IoT and legacy system
- DevOps pipeline

Prototyping journey

OUTCOME: DEEP DIVE

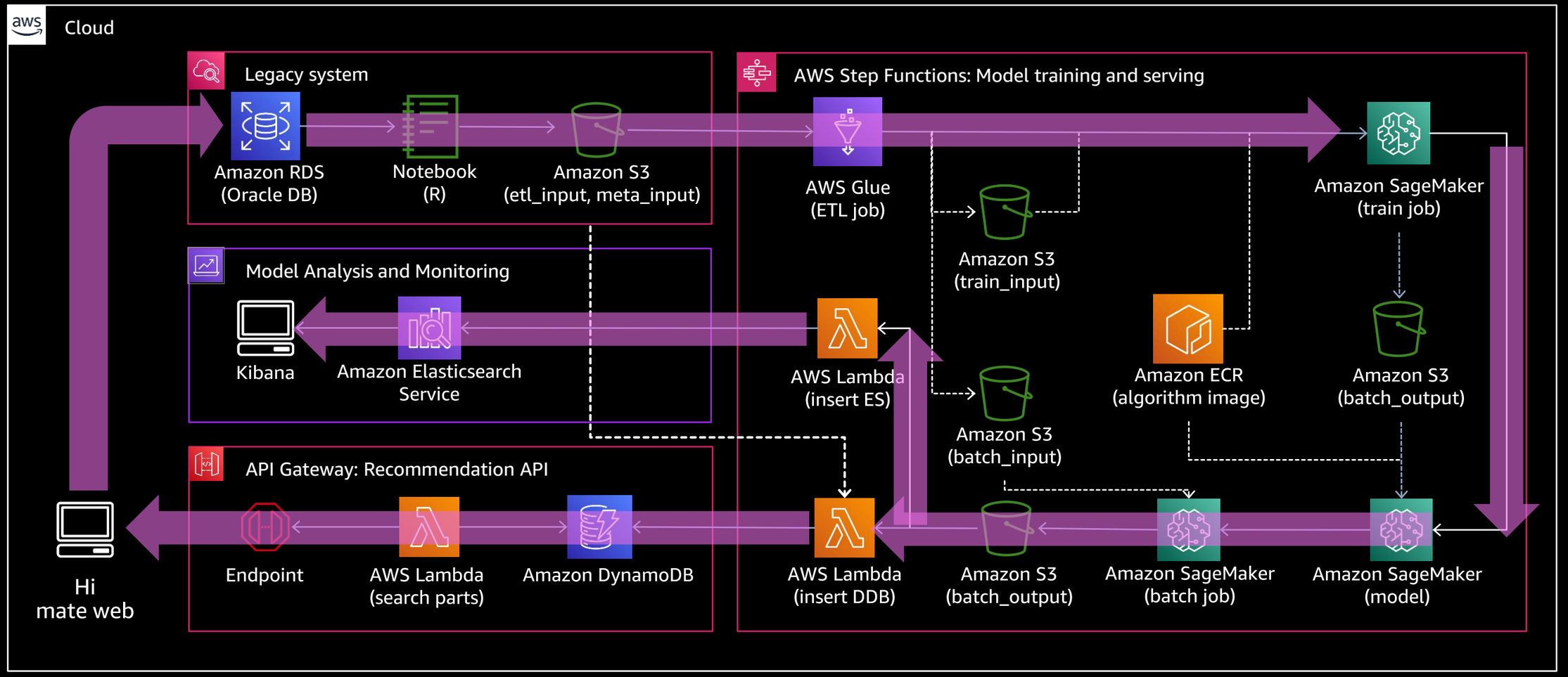
AI/ML diagnostics : From Cloud training to Edge inference



Prototyping journey

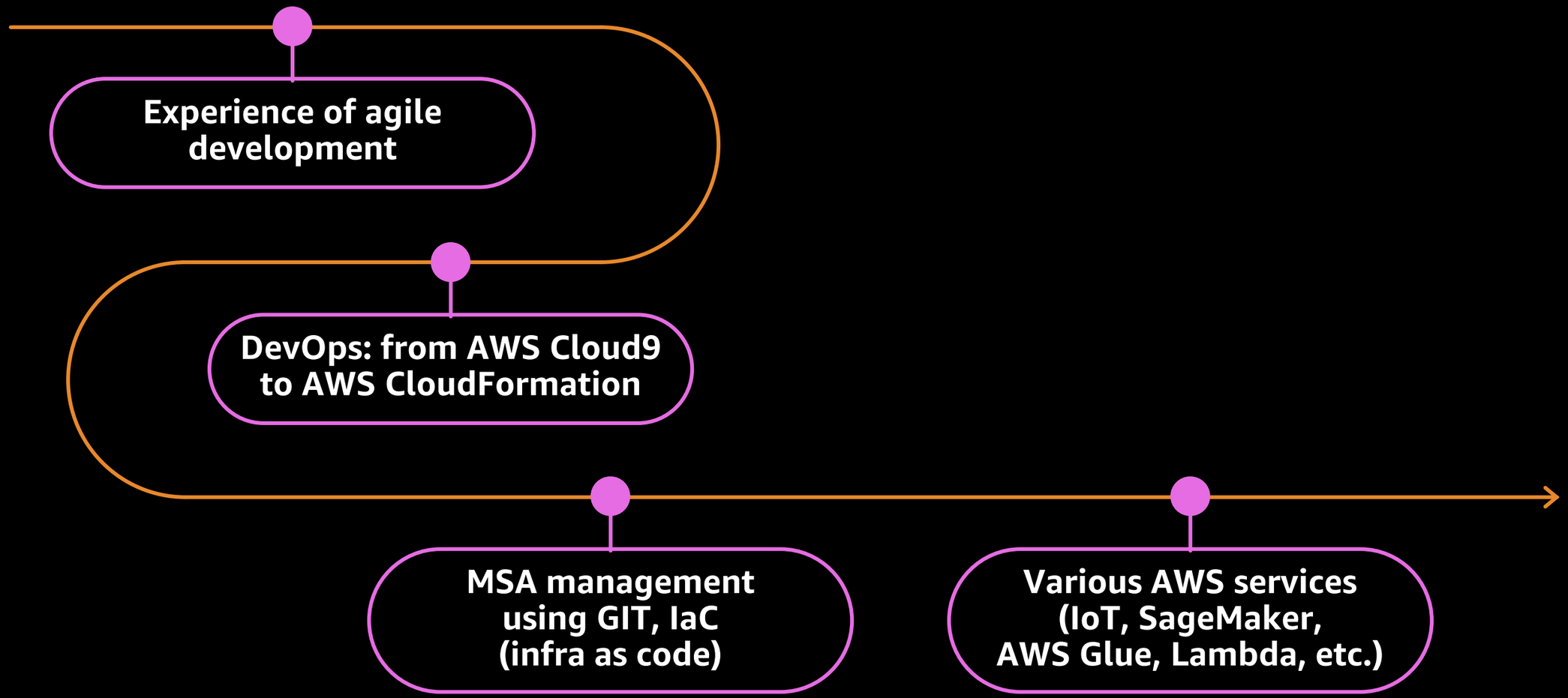
OUTCOME: DEEP DIVE

AI/ML part recommendation:



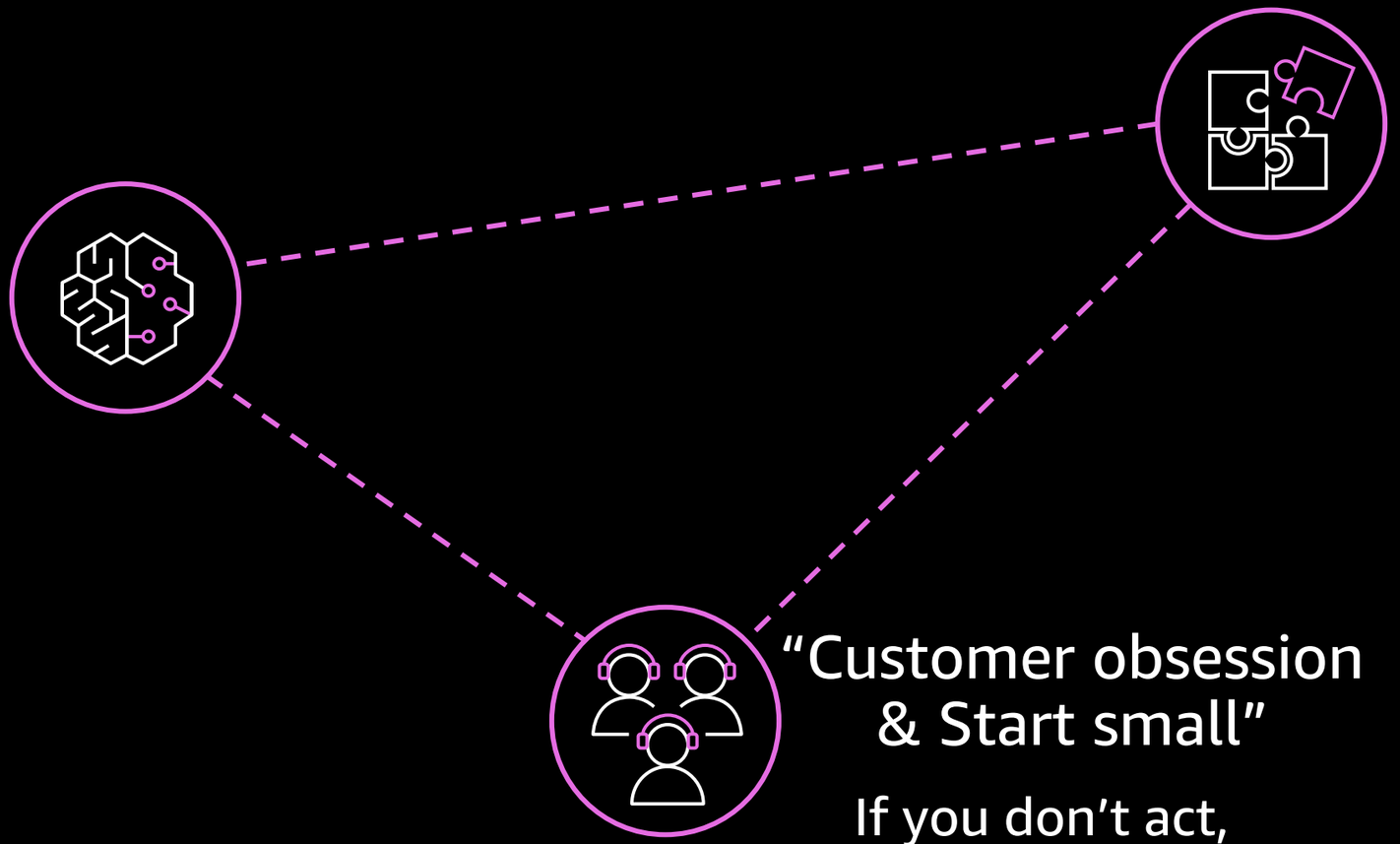
Prototyping journey

ADDITIONAL OUTCOME



Result

LESSON FROM BUILDING SMART SERVICES AND SOLUTION



“MSA & MVP”

Develop minimal module and connect it with existing service

“CFT & Scrum”

Organizing not for function but for objective

“Customer obsession & Start small”

If you don’t act, you don’t know what to do

Review

WORKING BACKWARDS PROCESS

Difficulties

- Setting up a consistent plan
- Coordination of conflicts between various departments
- Securing customer needs when it starts

Advantages

- Consistency of plan
- Breaking the silo effect
- Encouraging us to listen to customers

Future plan

LAUNCH SMART SERVICE

HYUNDAI CONNECT

Hi CARE

- Remote diagnostics
- Preventive maintenance
- Fleet analytics and monitoring

Thank you!

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Please complete the session survey

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