
AWS
re:Invent

ENT213

Application modernization

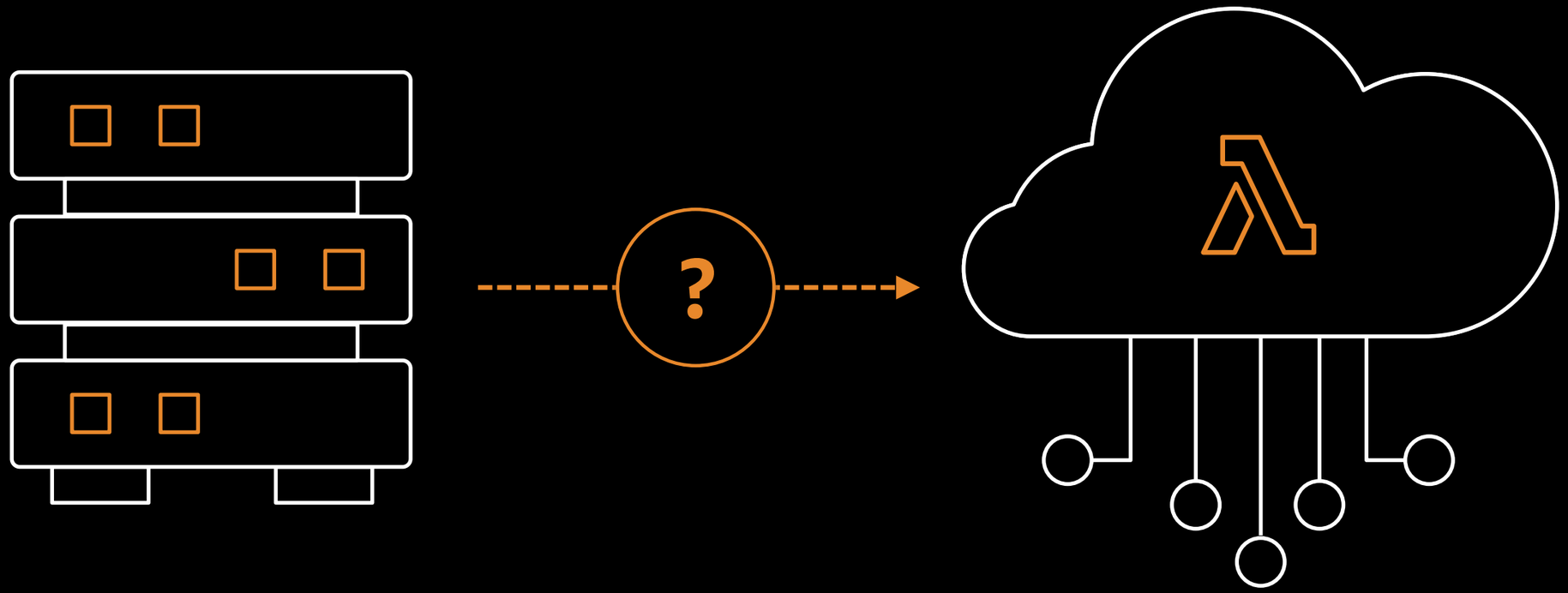
Bryan Landerman

Enterprise Strategist

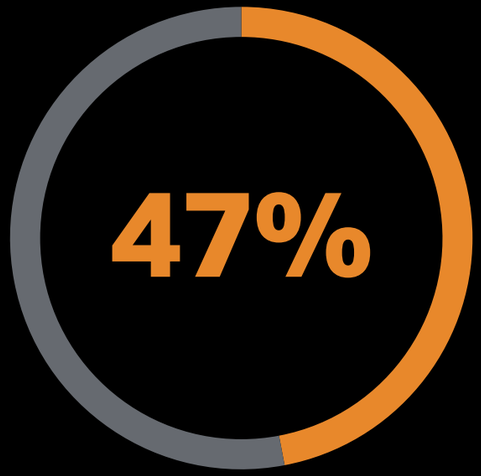
AWS

AWS re:Invent

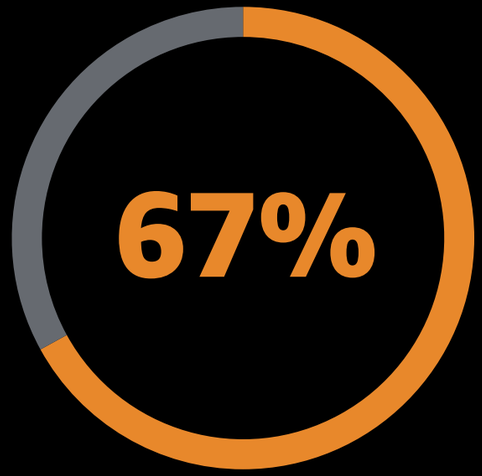
© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.



Need to pick up the pace of digitalization



of CEOs said they are being challenged by the board of directors to make progress in digital business



of all business leaders believe that they must pick up the pace of digitalization to remain competitive

Source: Gartner



1

Break up the work

Monolith to microservices



2

Invest in your workforce

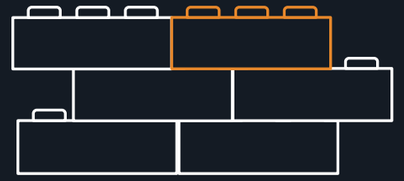
And put them closer to your customers



3

Automate your bureaucracy

To start finishing



4

Build it in, don’t bolt it on

Assume failure

Break up the work





People

Smaller teams that own products and services and organize around customer outcomes



Components

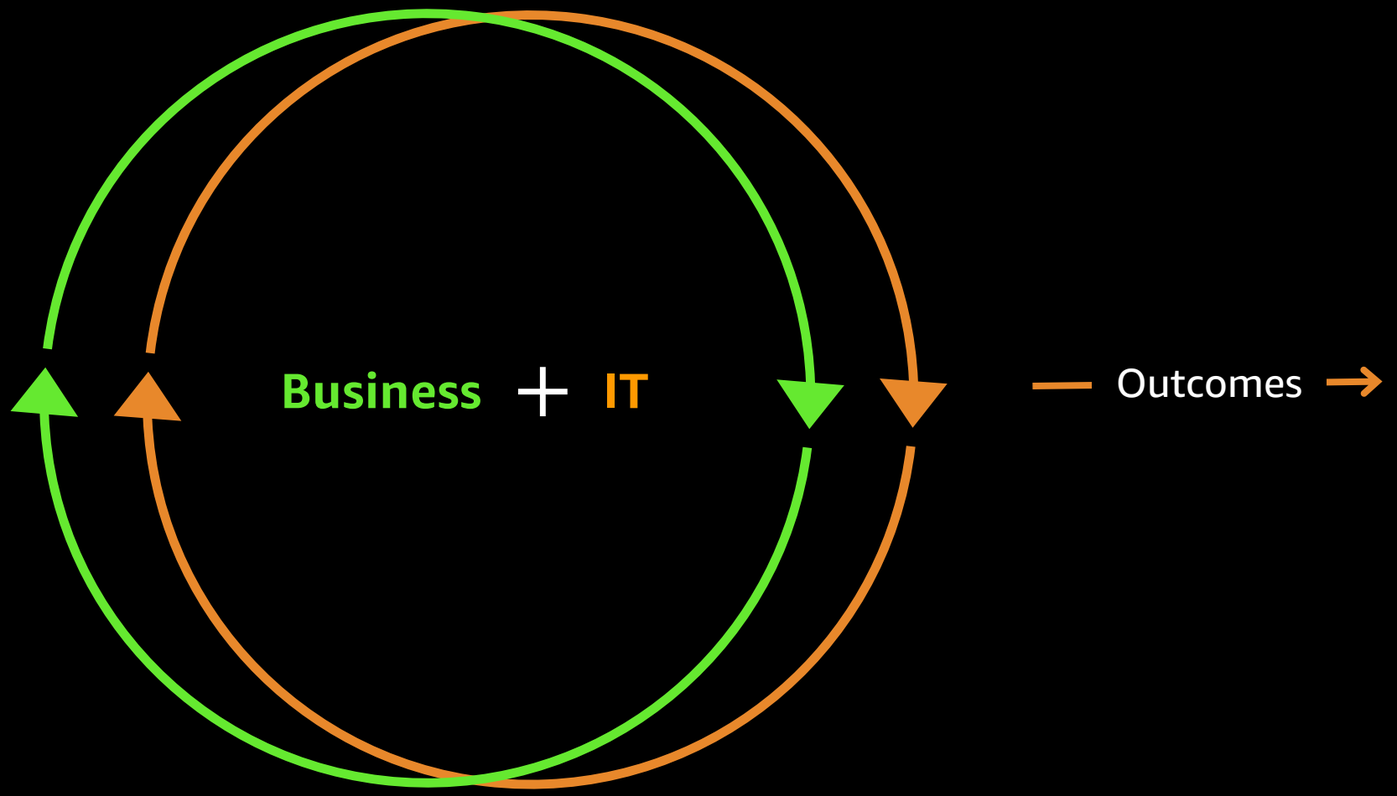
Smaller releasable components that are easier to own and operate, with well-defined boundaries, and a smaller blast radius

People evolution



Leader	Organization	Employees	Deliver
Autocratic	Activity	Order taker	Tasks
Democratic	Function	Participant	Projects
Servant	Team	Problem solver	Outcomes

Shared outcomes



New ideas and innovation

Operational excellence

Speed and agility

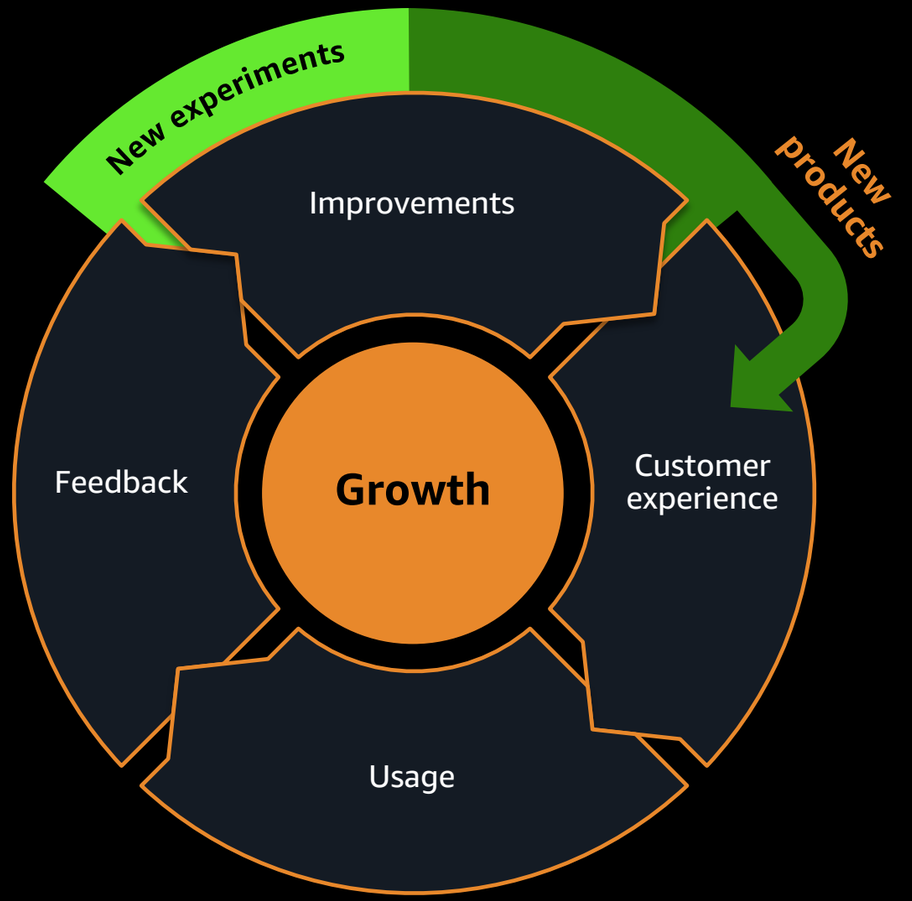
Cost optimization

Value and results

Security and compliance

Customers: fuel for products and services

Focusing on customer experience drives the flywheel for product usage and new innovations



Cox Automotive™

120-year-old
private, family owned enterprise

50+ data centers
working across 15 locations

34,000
global team members with more than 20 brands through 40+ acquisitions

Growth
through acquisition over time, many over the past 10 years

Working with
IBM RPG on the iSeries, Oracle Exadata, IBM DataPower, Oracle Coherence, .Net, Java and Python

Diverse
set of cultures, technologies and techniques

Manheim · Autotrader · Kelley Blue Book KBB.COM The Trusted Resource · vAuto LIVE MARKET VIEW · Dealertrack · DEALER.COM

COX AUTOMOTIVE™

SAFe® for Lean Enterprises is a knowledge base of proven, integrated principles, practices and competencies for achieving business agility using Lean, Agile and DevOps

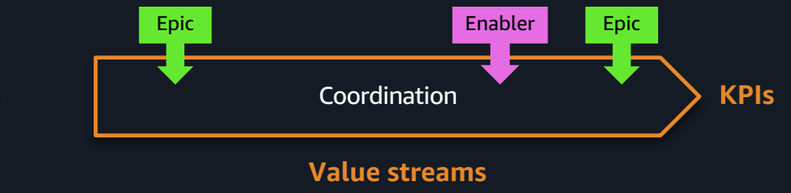
6 portfolios

20 solution trains

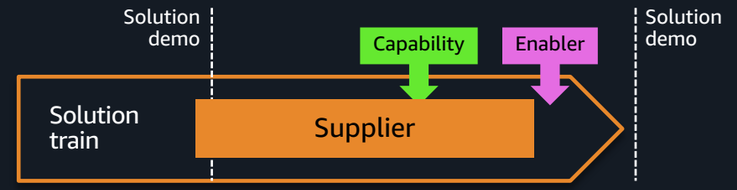
70 release trains

350 scrum teams

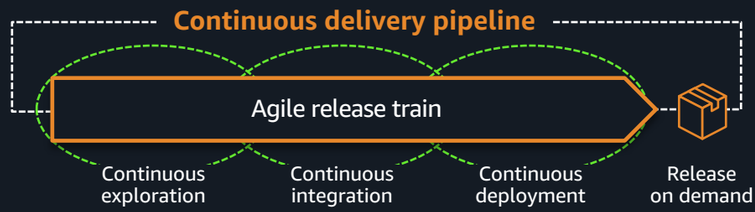
Portfolio



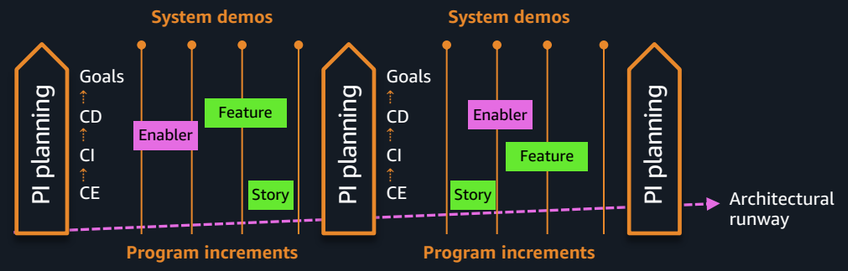
Solution



Release



Team



https://www.scaledagileframework.com/

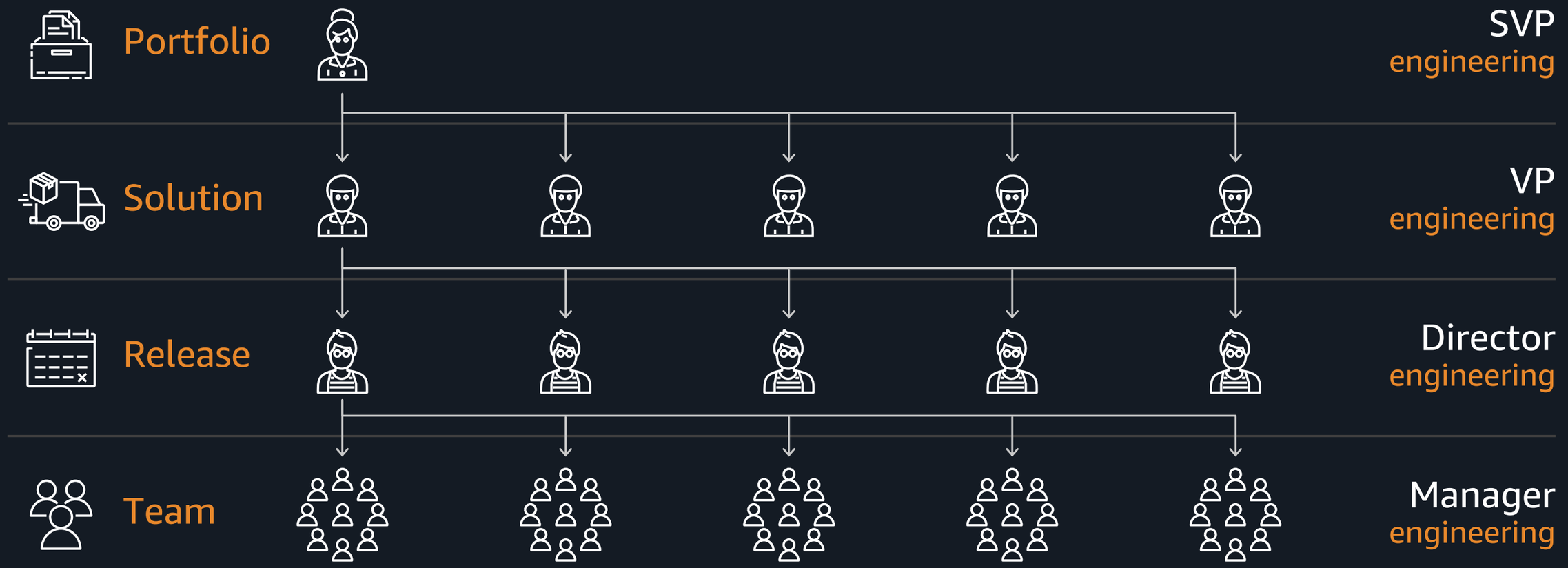
COX AUTOMOTIVE™

Alignment

	Business	Product	Engineering	Architecture	
Portfolio					Line of business
Solution					Business unit
Release					Product line
Team					 Feature / function

COX AUTOMOTIVE™

Accountability



Break up the work





People

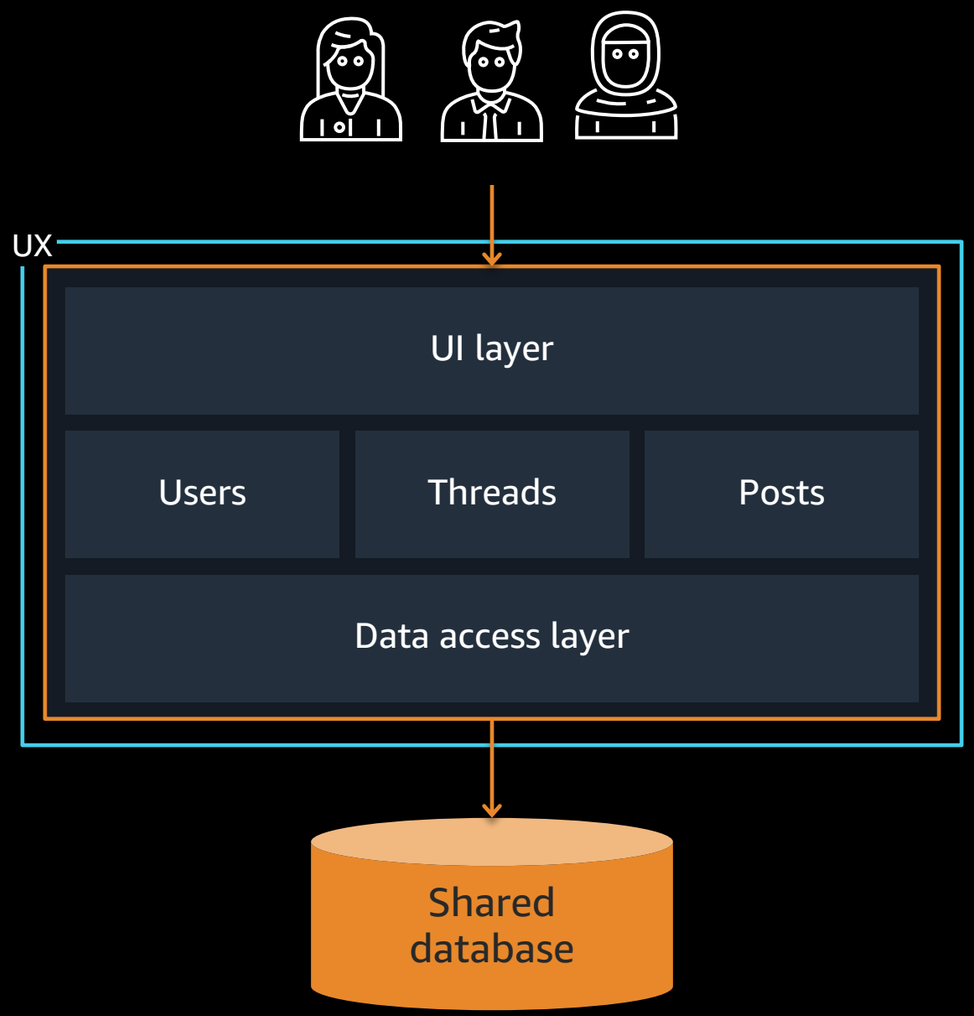
Smaller teams that own products and services, and organize around customer outcomes



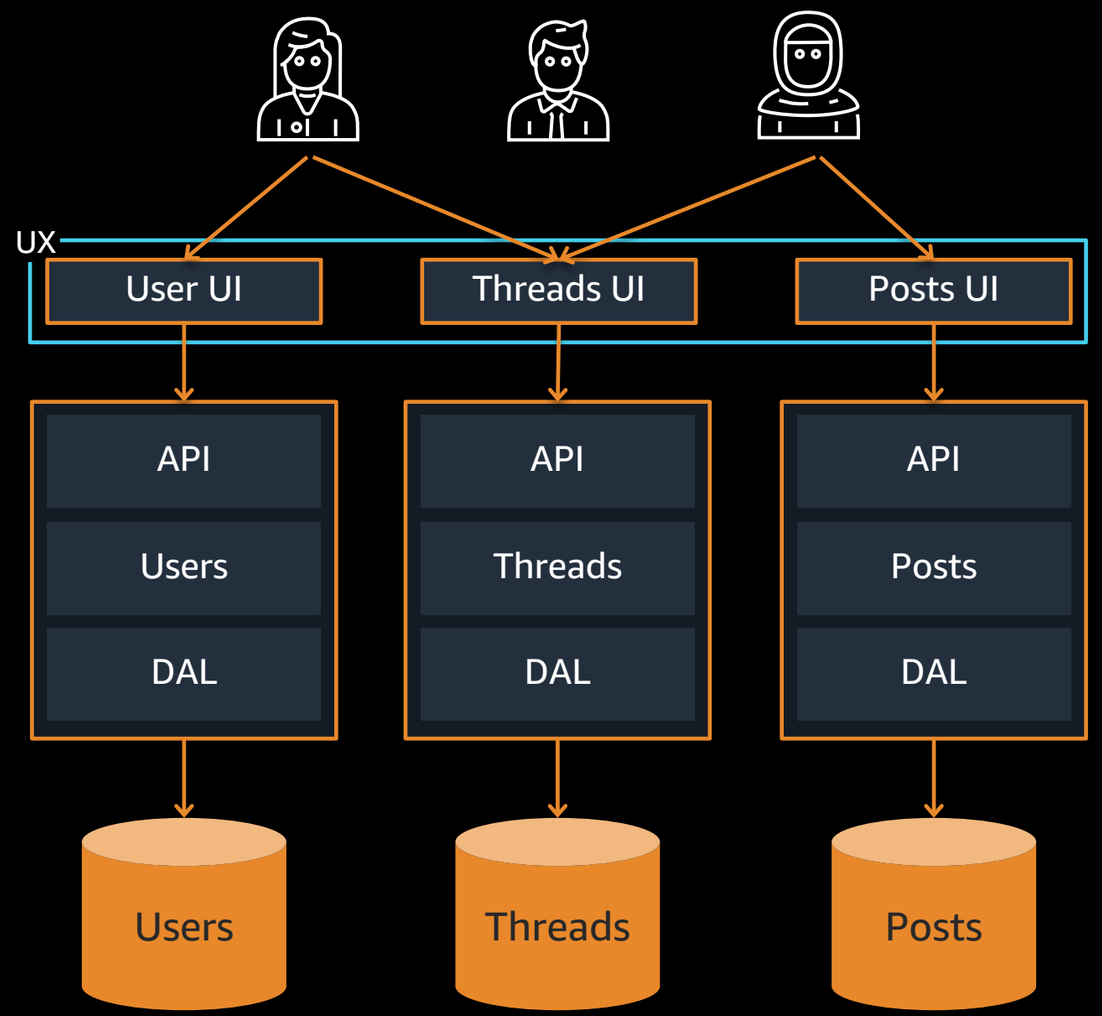
Components

Smaller releasable components that are easier to own and operate, with well-defined boundaries, and a smaller blast radius

Monolith



Microservice

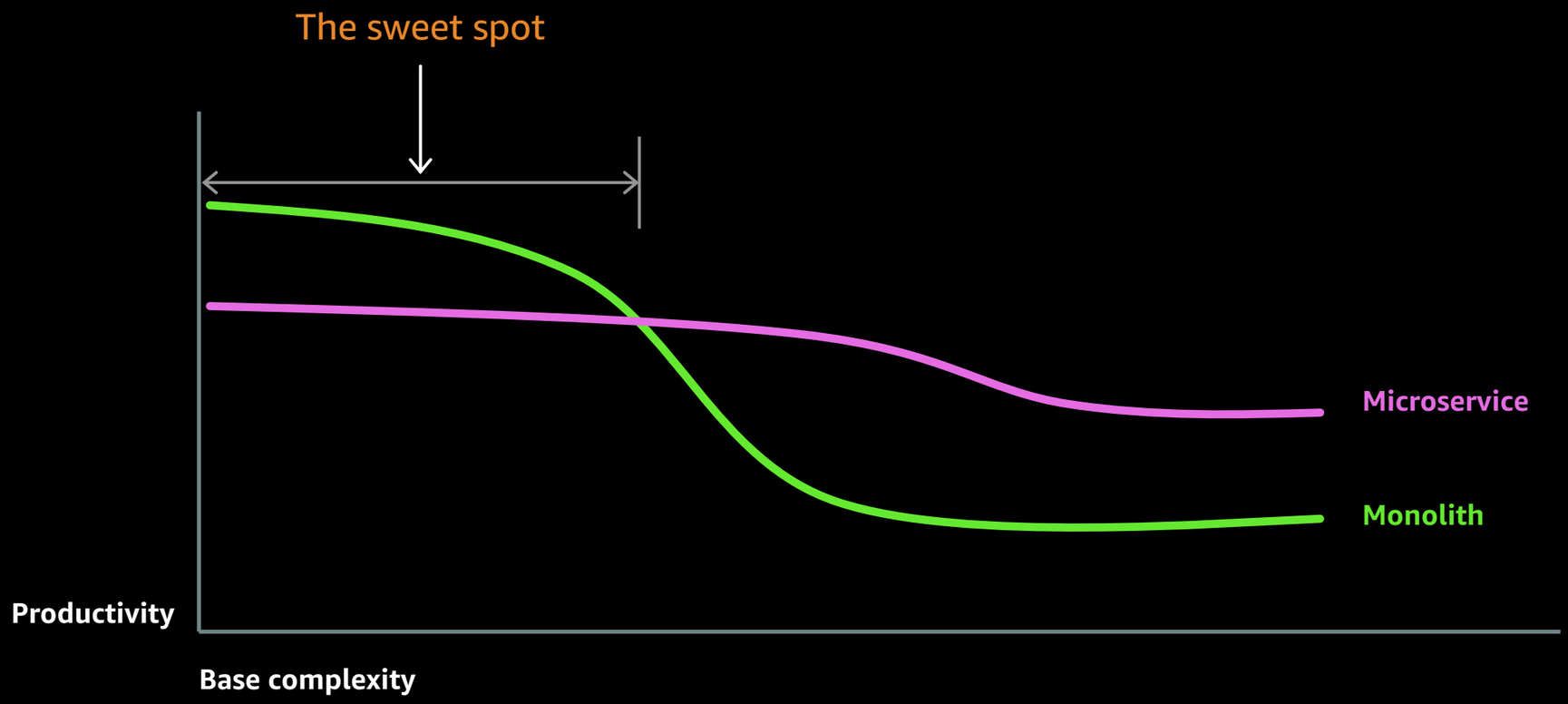


Anti-patterns for solution delivery



From	To
Premature optimization	Shrink and refactor over time
Work that starts and ends	Continuously improving and refactoring
Changes resulting in complexity	Using change to intentionally simplify
Contention and wait states	Independent and autonomous
Long delivery cycles	Constant change and learning

Monolith vs. microservice



https://martinfowler.com/bliki/MicroservicePremium.html

Learn along the way

The sweet spot



Boundaries



Identify common data and functional areas and their relationships

Usage



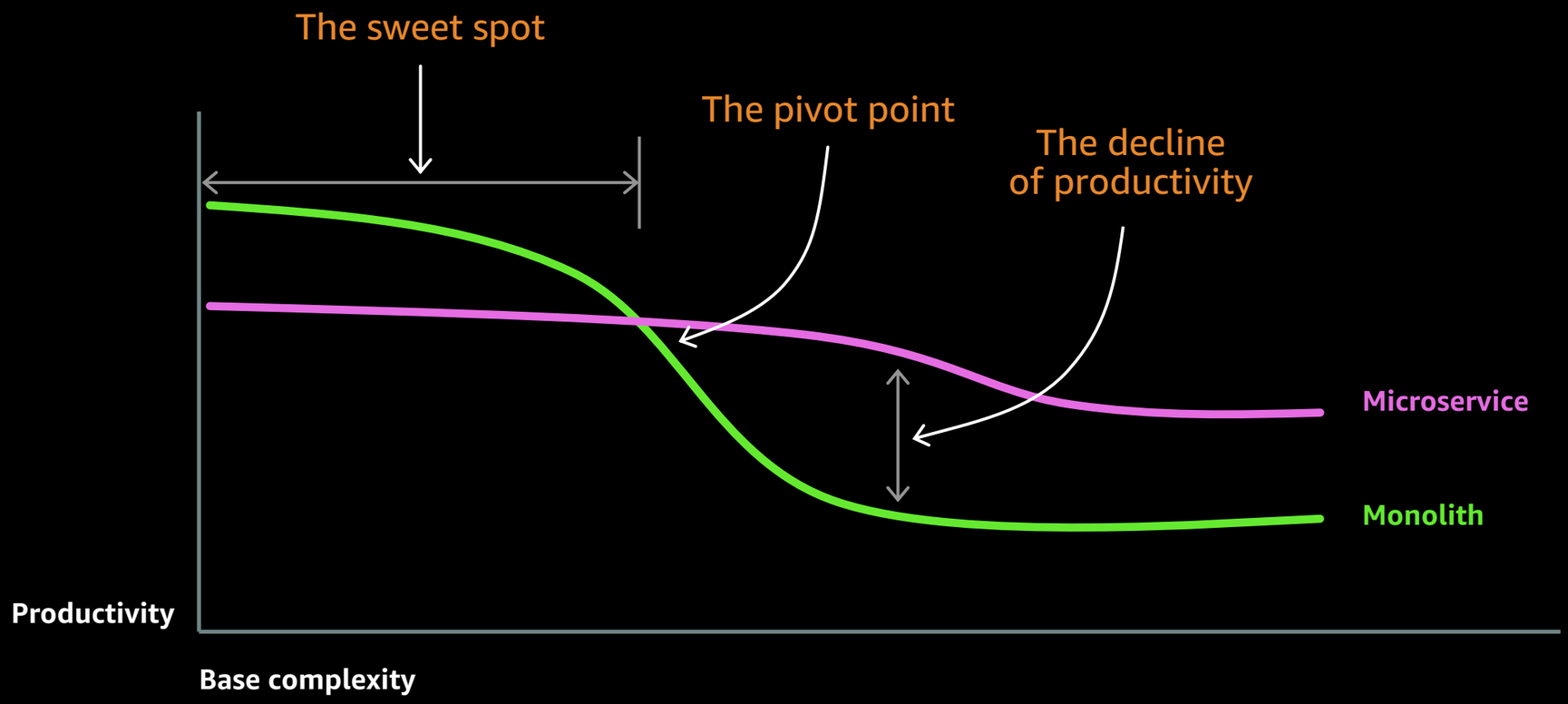
Monitor usage and identify inequalities

Change



Monitor rate of change over time and the elapsed time between changes

Monolith vs. microservice

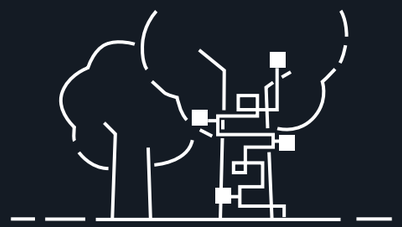


https://martinfowler.com/bliki/MicroservicePremium.html

Patterns for decomposition



Event decoupling

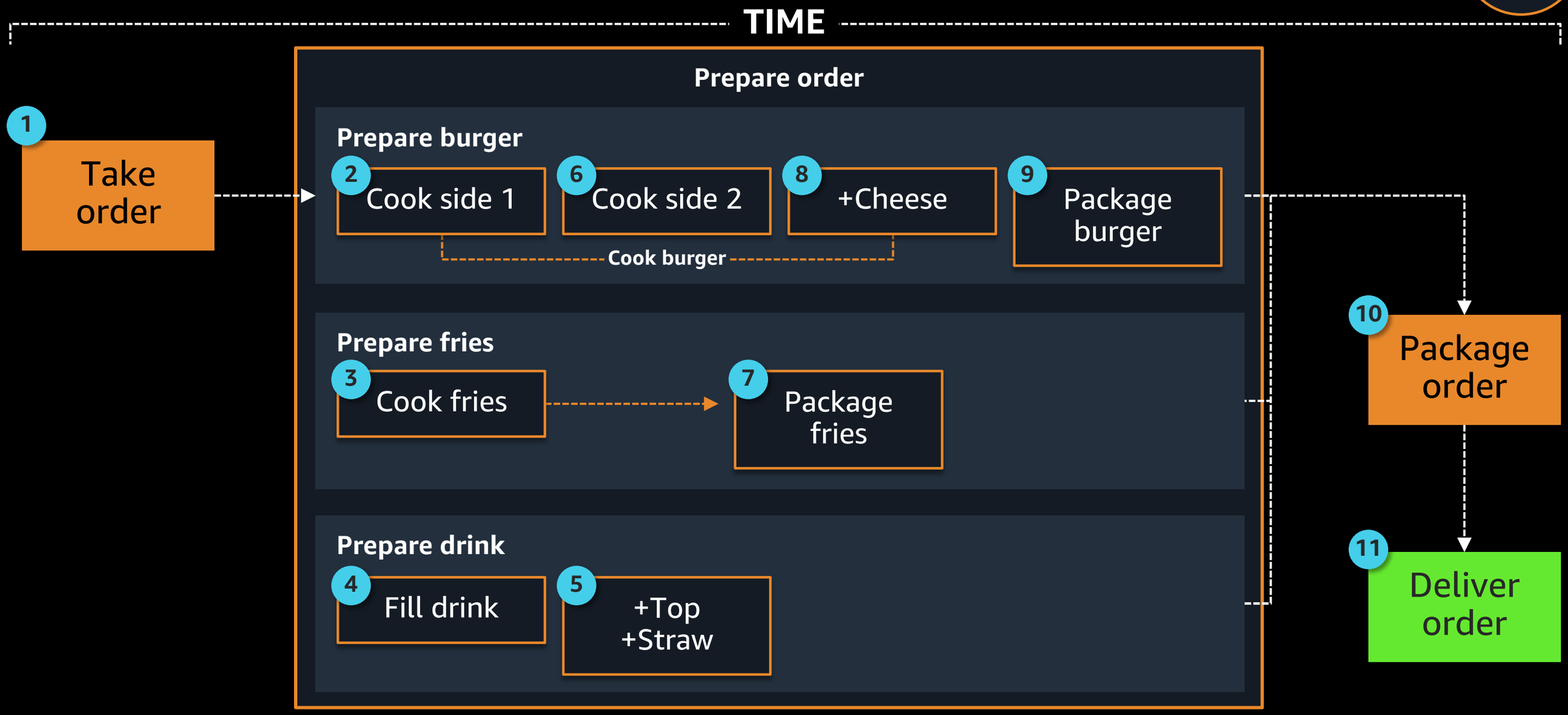


Strangler pattern

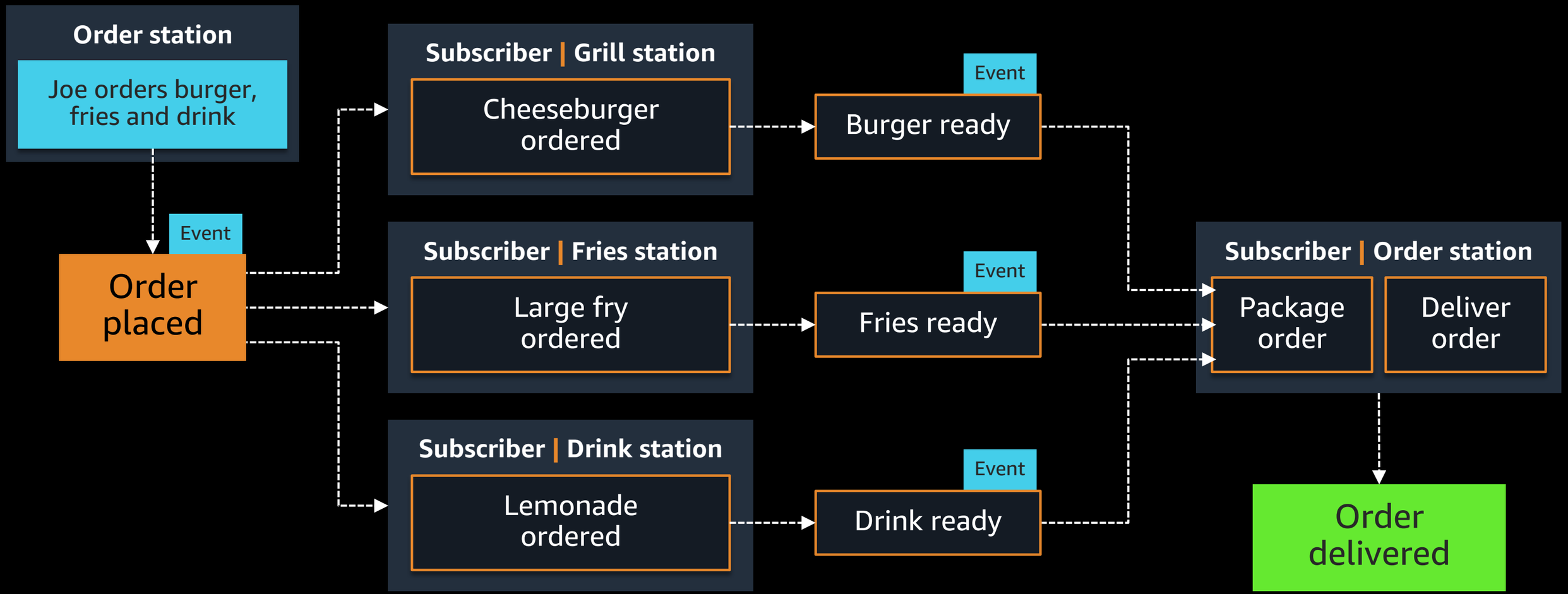


Domain-driven design

Events as decouplers

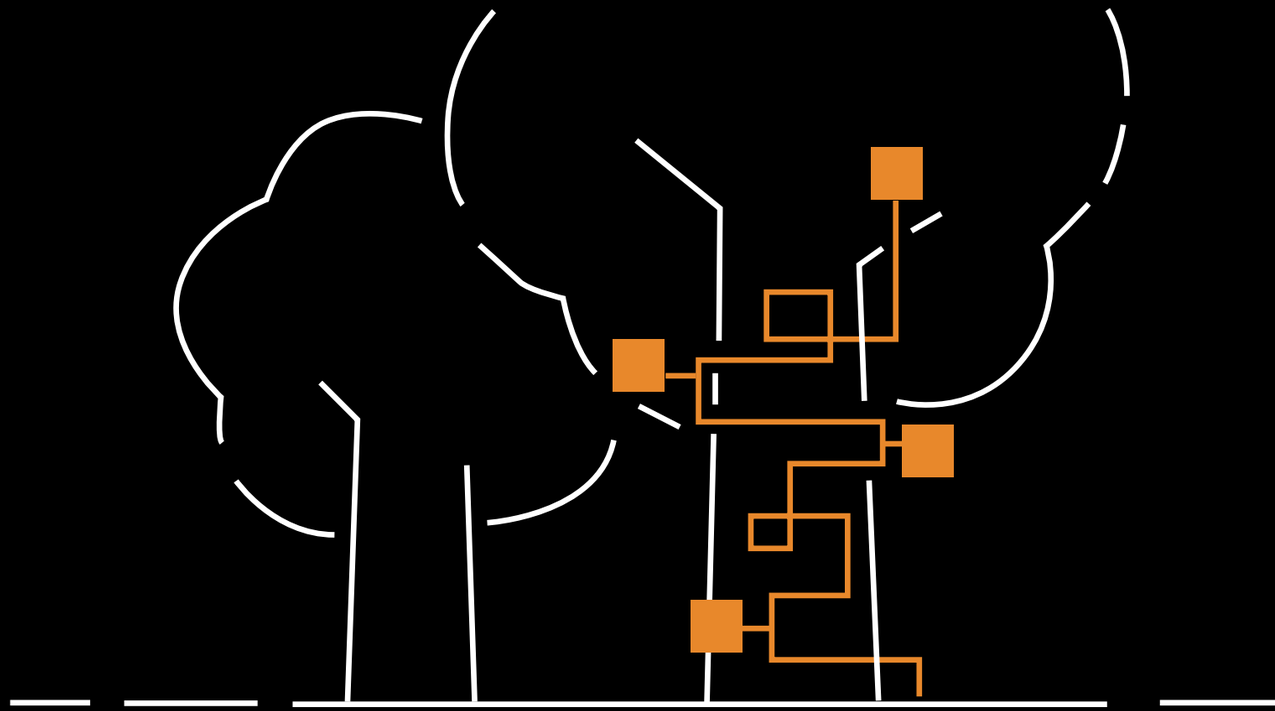


Events as decouplers



The strangler pattern

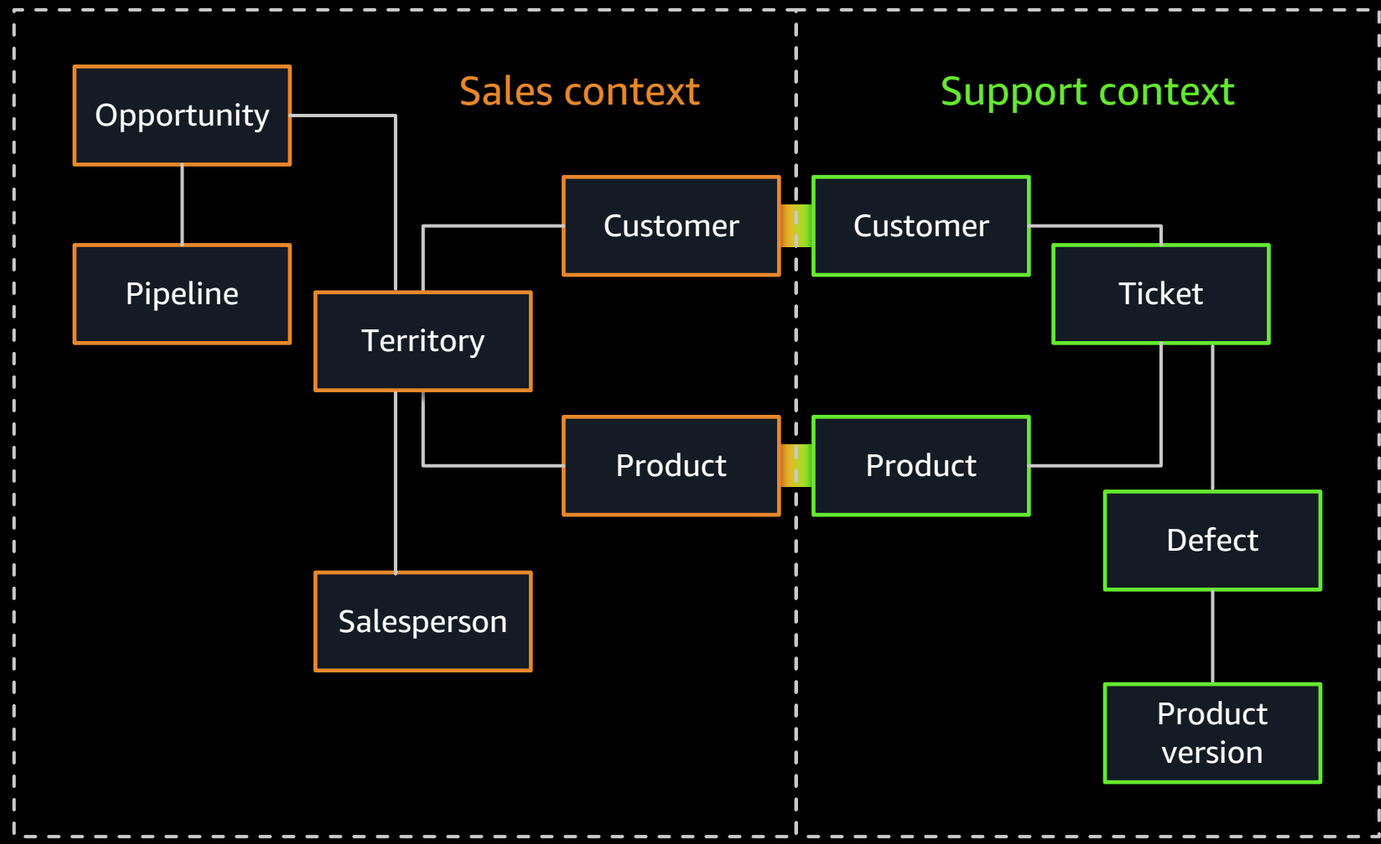
Moving monolithic applications to microservices by gradually creating events and APIs for various components of the legacy application



https://martinfowler.com/bliki/StranglerFigApplication.html

Domain-driven design

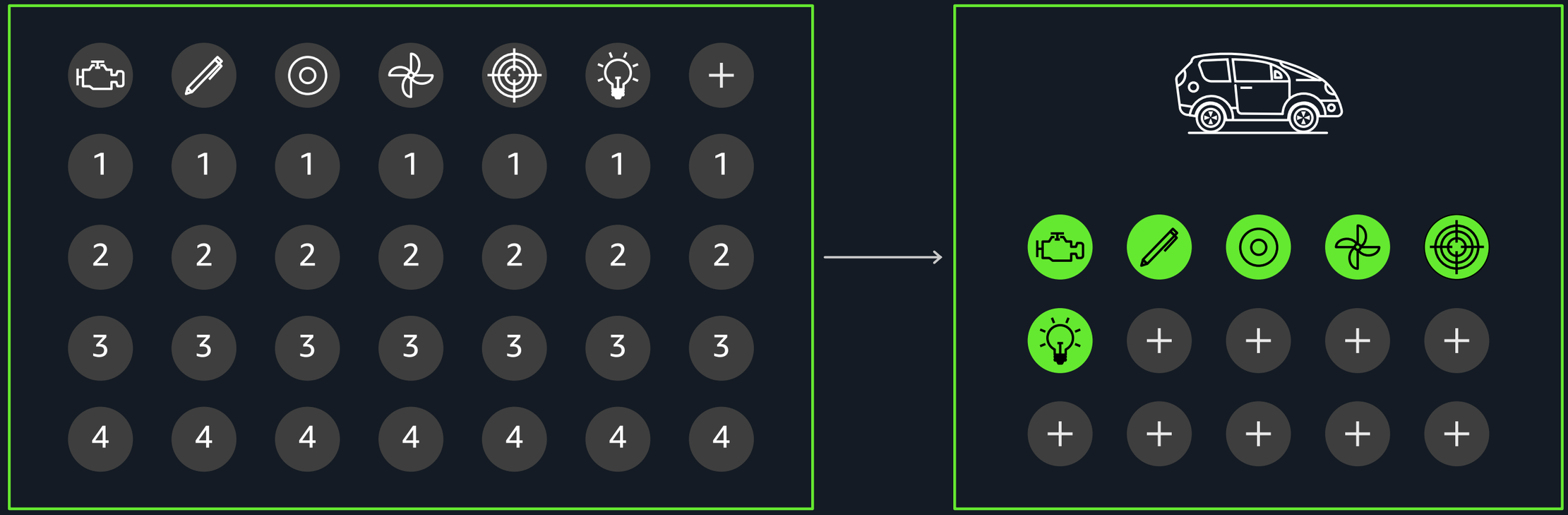
Bounded contexts are used to simplify complex models and teams; multiple bounded contexts results in smaller, easier-to-manage components



BMW GROUP

THE NEXT 100 YEARS

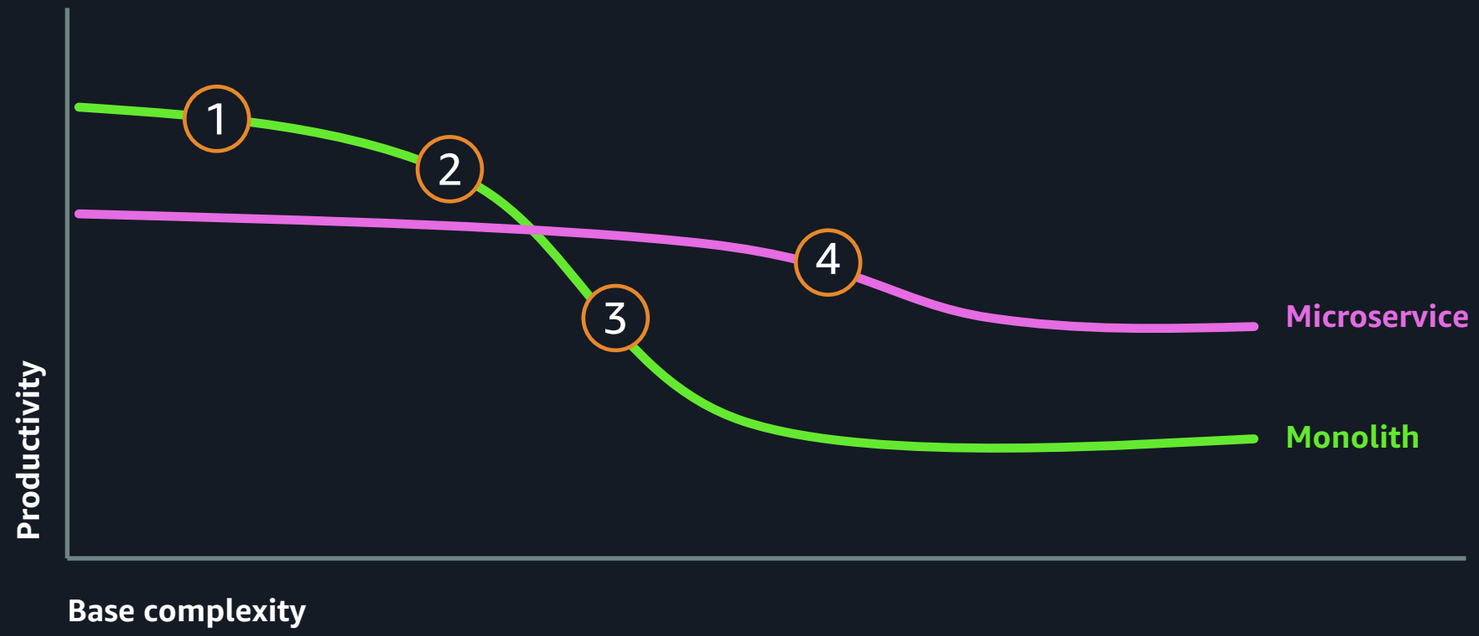
Many possibilities to configure your car



BMW GROUP

THE NEXT 100 YEARS

Complexity drives change



1. **Initial development was fast** and focused on the MVP
2. Over time **high dependencies developed** and the overall **complexity increased**
3. Development speed became **slower and slower;** minor changes led to **large refactorings**
4. The software was divided into **small self-contained** and independent **”microservices”**

https://martinfowler.com/bliki/MicroservicePremium.html

BMW GROUP

THE NEXT 100 YEARS

1 Identify bounded context

- Understand the domain
- Cut microservices

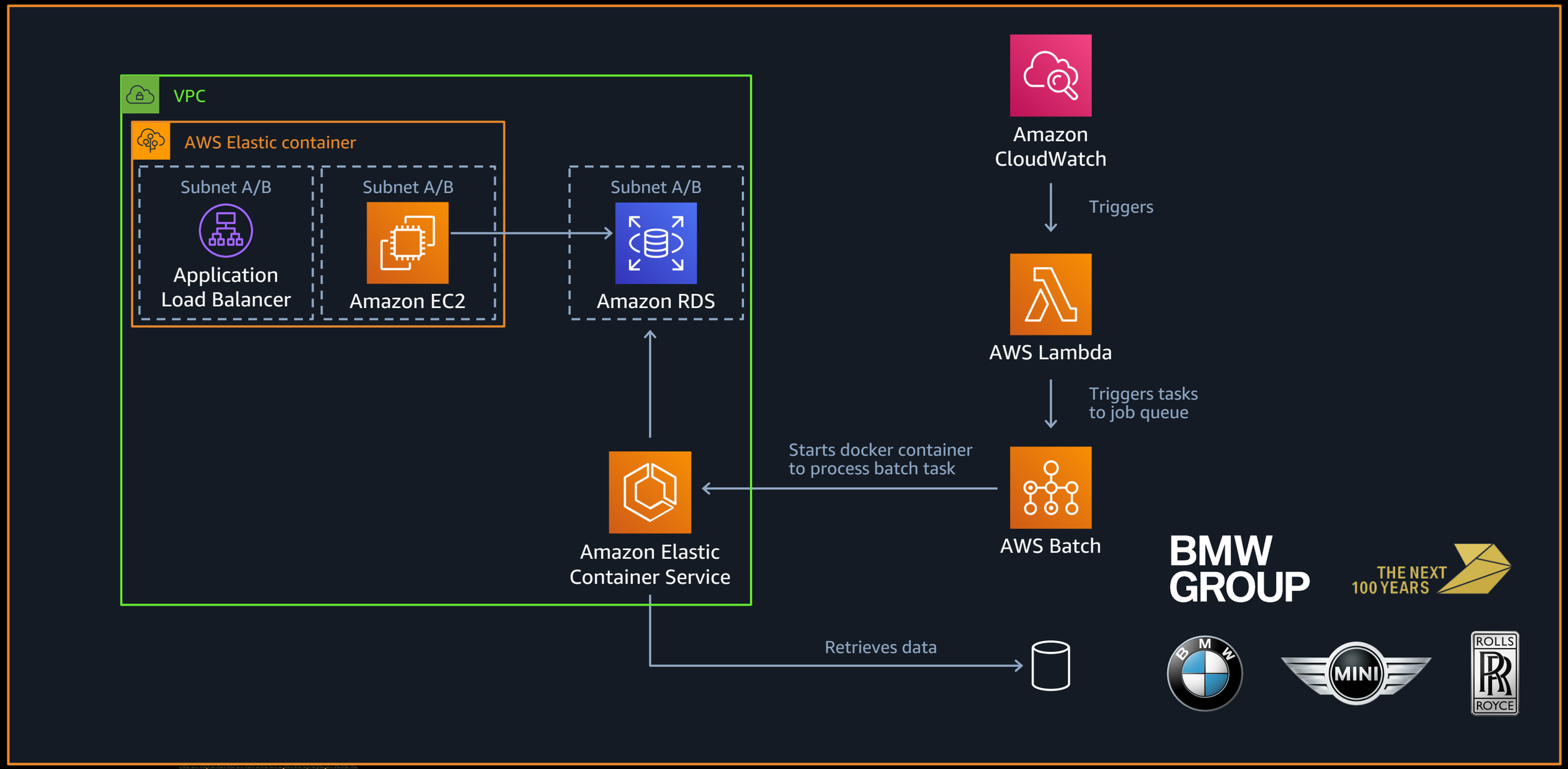
2 Identify business objects

- Business object model for each microservice
- Learned from the details
- Verified / reshaped decision from step 1



3 Define API-first

- Each business object leads to one or more REST resources
- Business object attributes became part of the JSON payload
- Followed REST best practices


VPC
AWS Elastic container
Subnet A/B
Application Load Balancer
Subnet A/B
Amazon EC2
Subnet A/B
Amazon RDS
Amazon Elastic Container Service
Amazon CloudWatch
Triggers
AWS Lambda
Triggers tasks to job queue
Starts docker container to process batch task
AWS Batch
Retrieves data
BMW GROUP
THE NEXT 100 YEARS
MINI
ROLLS ROYCE

petco

“Remember, this is a journey and starting is the hardest part. Start by choosing something impactful and specific and work to decompose it and iterate. You can wrap things that can't be decomposed with something that resembles a service or set of services, and keep progressing.”

Brendten Eickstaedt
VP, IT Innovation & Delivery Services

AWS Executive Insights

https://aws.amazon.com/executive-insights/



https://open.spotify.com/show/1Qp5byBTSBeF20RdyWuIgd

AWS LinkedIn Community for Executives

https://www.linkedin.com/groups/8409018/

AWS Enterprise Strategy Blog

https://aws.amazon.com/blogs/enterprise-strategy/

AWS re:Invent

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Thank you!

Bryan Landerman

 **/in/bryanlanderman**

 **@bryanlanderman**

AWS re:Invent

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.



Please complete the session survey

AWS re:Invent

© 2020, Amazon Web Services, Inc. or its affiliates. All rights reserved.