AWS

SUMMIT

DevOps at Amazon: A Look at Our Tools and Processes

Steffen Grunwald, Solutions Architect, AWS

18. May 2017

amazon web services

15 years

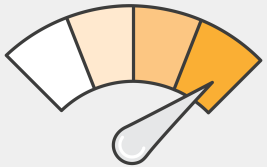
2/3 IT budget

77% CEOs

Responding requires a new model

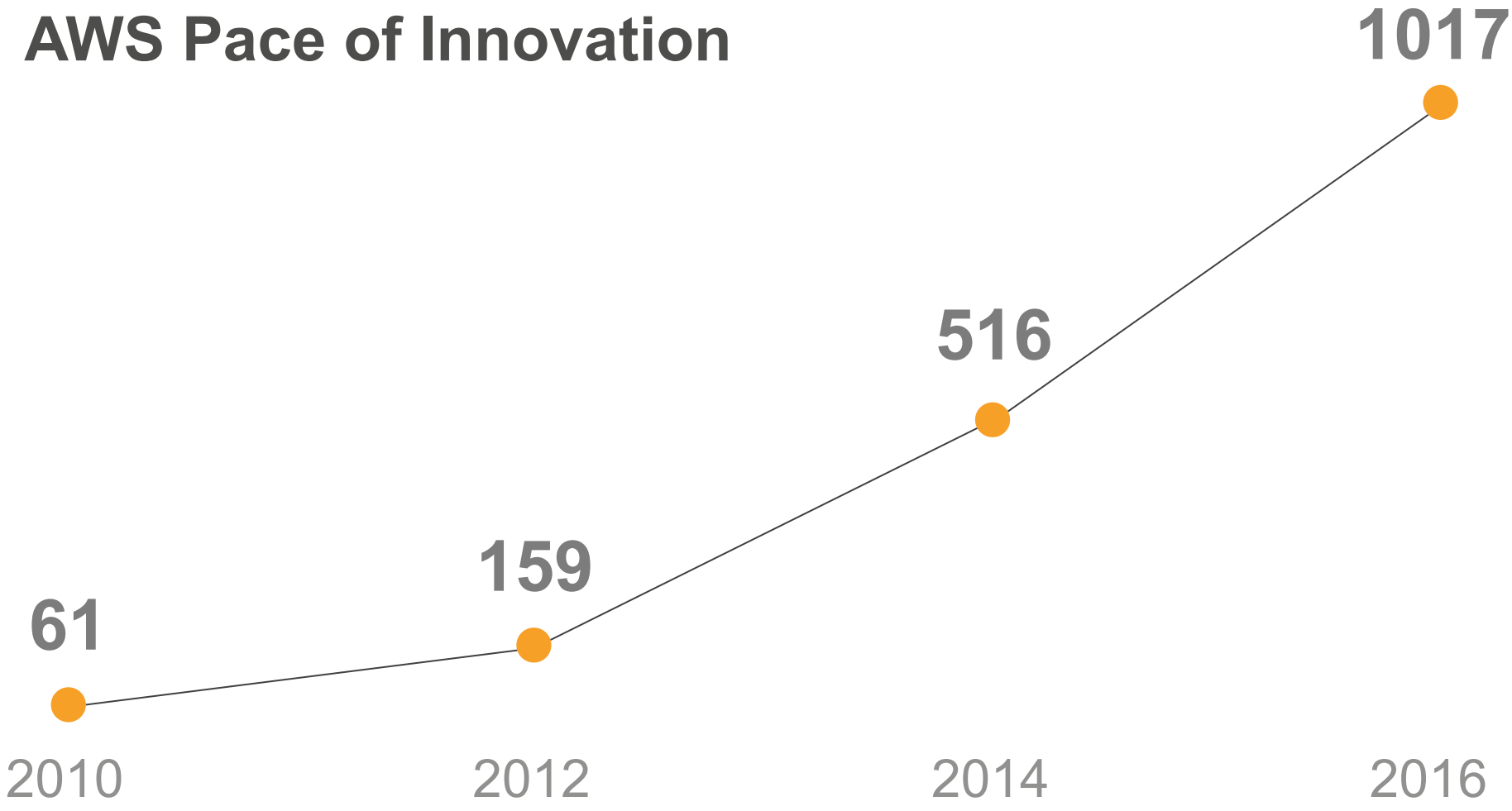
Focus on differentiating your company

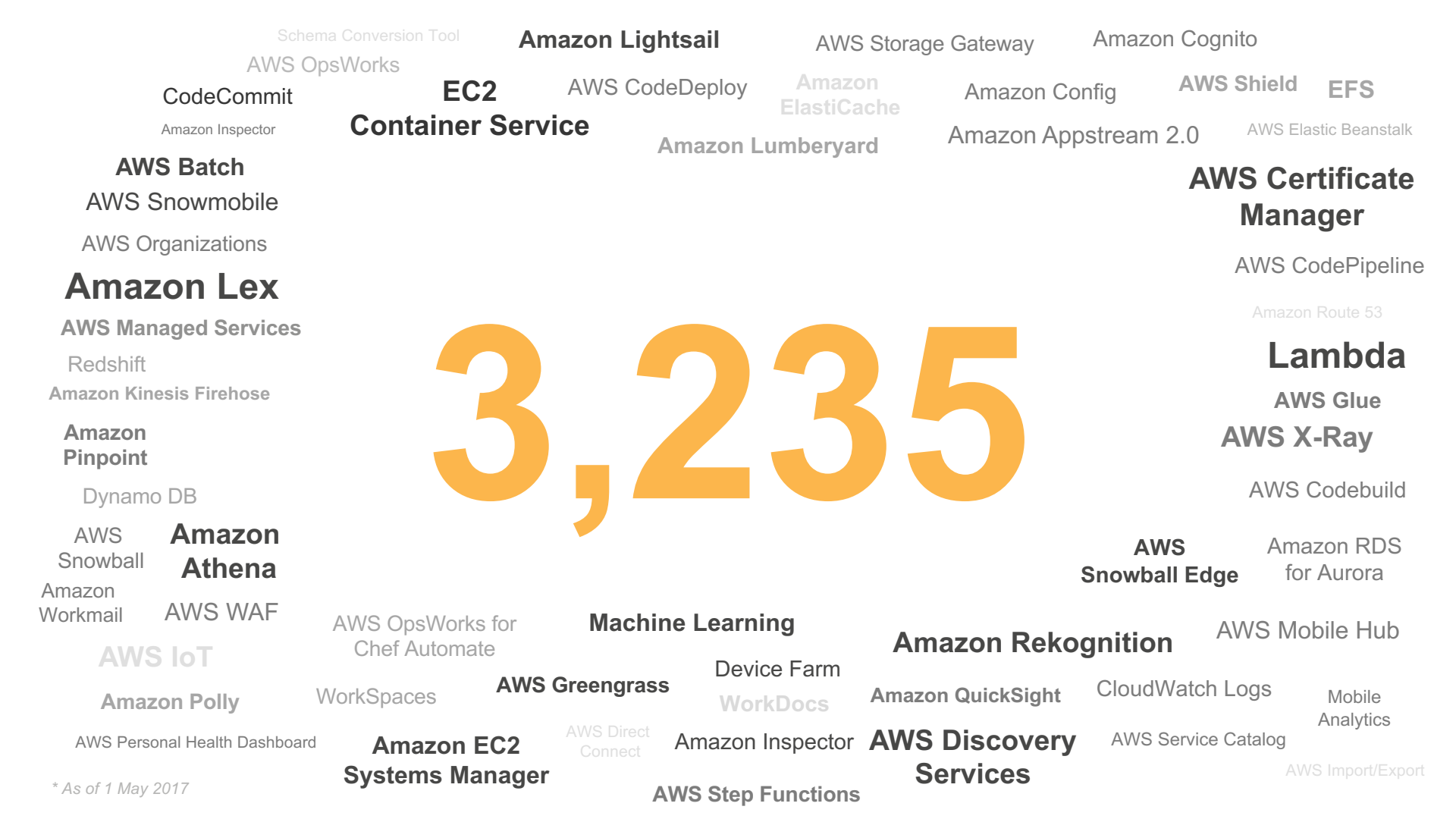
Reduce risk



Innovate at start-up like speed

AWS Pace of Innovation





** As of 1 May 2017*

But **innovation** is **hard**…

…how can companies build an effective innovation system and an environment that will foster and **support human creativity** and **drive technological progress**?

$$f(\text{innovation}) = (\text{culture} * \text{structure})^{\text{tooling}}$$

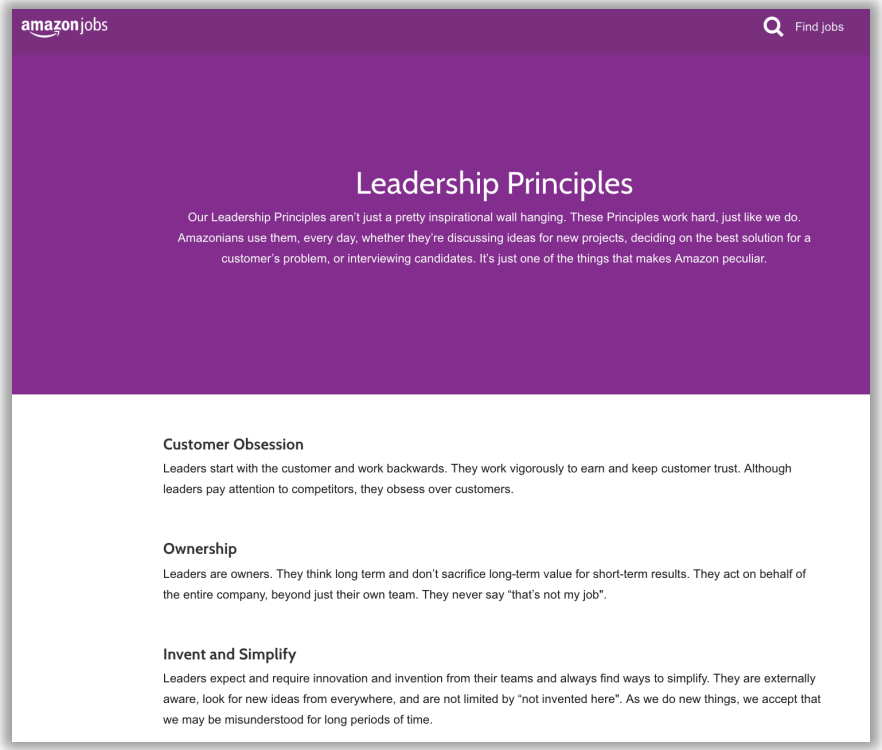
(Innovation is the product of culture and structure with the power of tooling)

$$f(\text{innovation}) = (\text{culture} * \text{structure})^{\text{tooling}}$$

Innovation requires **culture** that fosters **invention**.

Culture is the **principal component**
in velocity of innovation.

Amazon leadership principles



https://www.amazon.jobs/principles

A company of builders…
builders come to build.

“Invention requires two things: the ability to try a lot of experiments, and not having to live with the collateral damage of failed experiments”

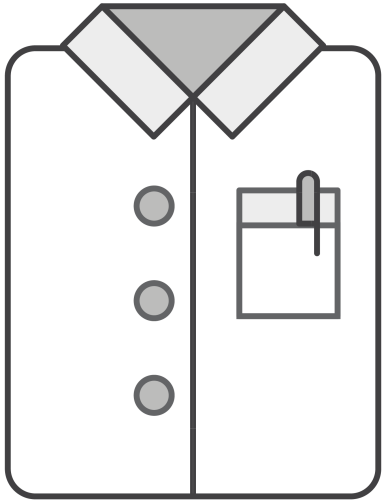
Andy Jassy, CEO, Amazon Web Services

f(innovation) = (culture * structure) tooling

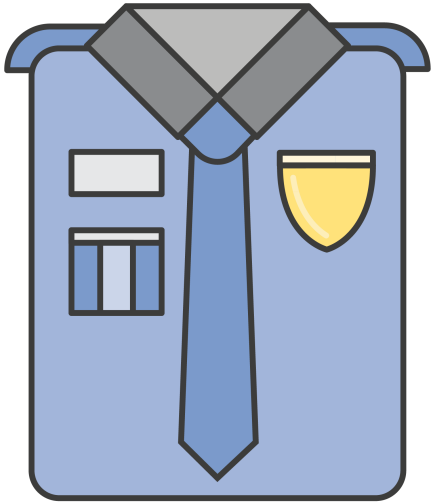
Good intentions are never enough, you must build **structure** and create **innovation fostering habits**.

We measure performance of our processes, improve it and remove bottlenecks.

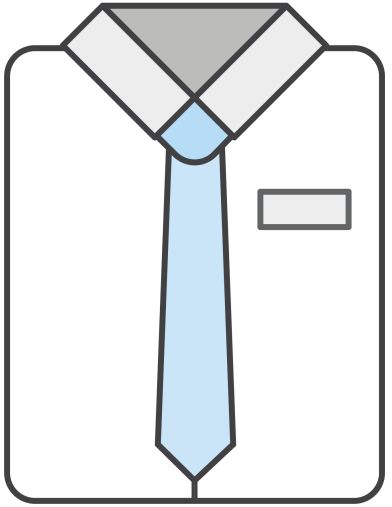
A world of conflicting priorities



Developers
Paid to
change

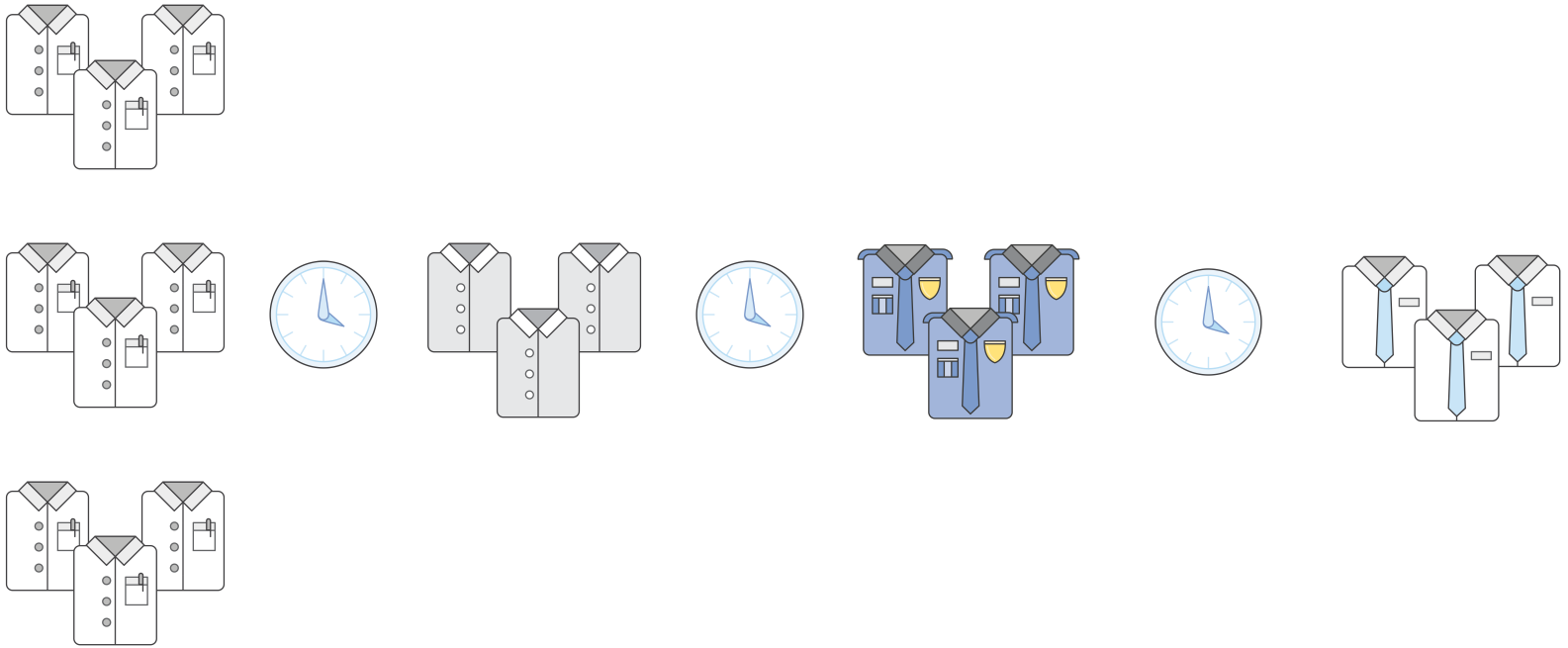


Security
Paid to prevent
risk



Operations
Paid to ensure
stability

…and of bottlenecks

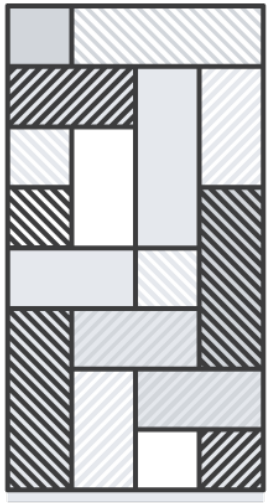


Development → Testing → Security → Operations

Avoid future firefighting by including others early and by investing time to paying back technical debt.

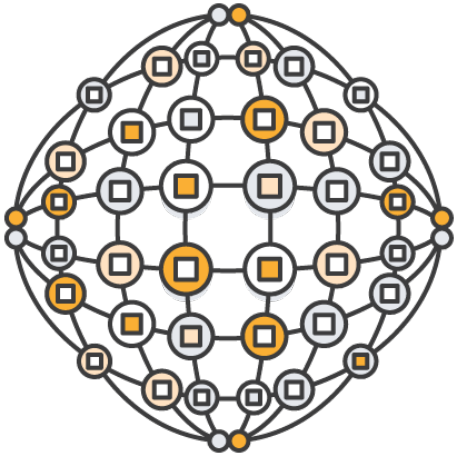
Development transformation at Amazon: 2001-2009

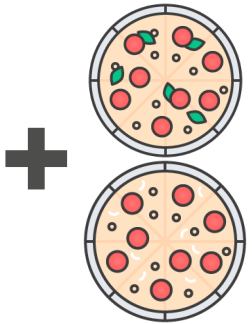
2001

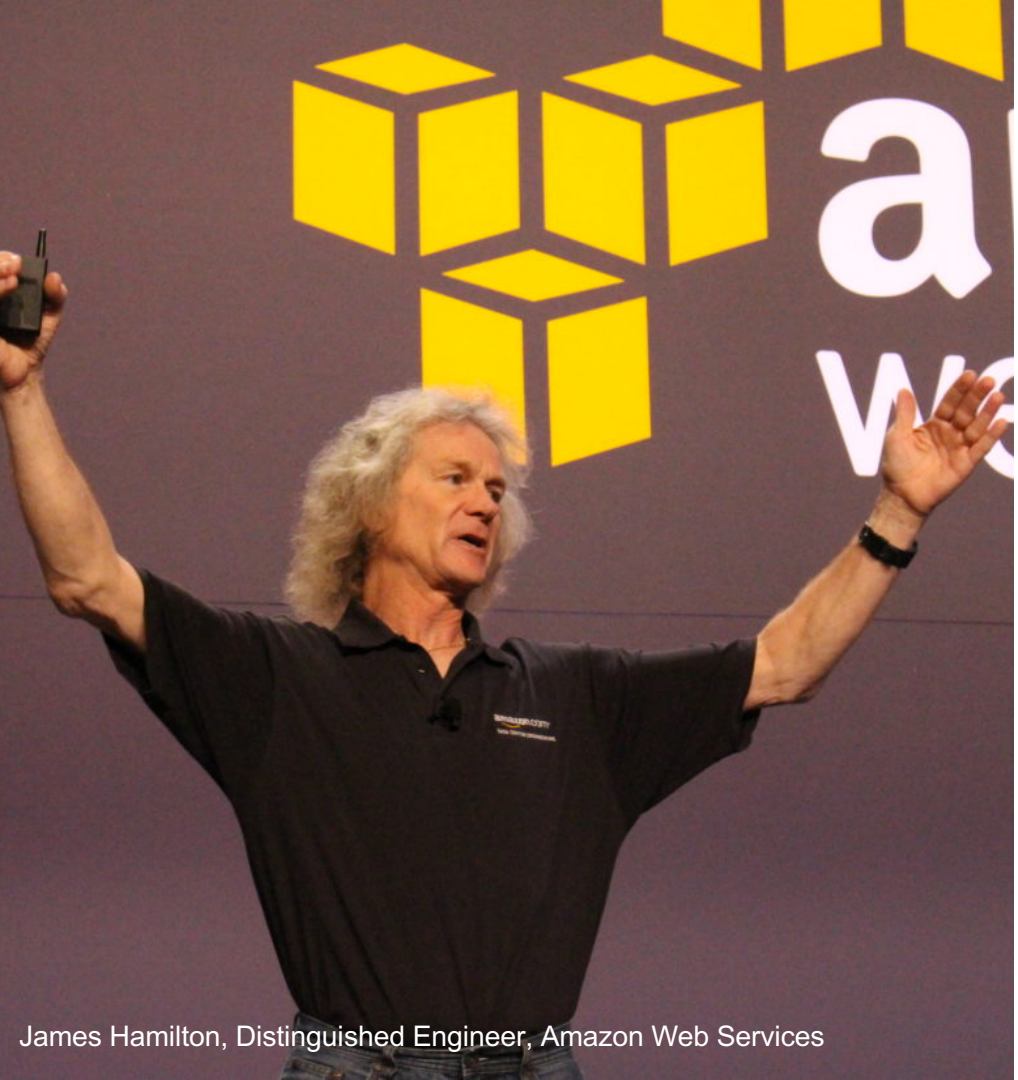


2006

2009







James Hamilton, Distinguished Engineer, Amazon Web Services

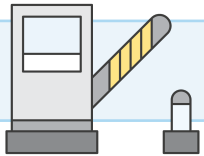
“If the development team is frequently called in the middle of the night, automation is the likely outcome. If operations is frequently called, the usual reaction is to grow the operations team.”

While all teams are autonomous, they are defined and driven by the cultural DNA (Leadership Principles) at every step.

Strive for continuous deployment.
Use metrics and tooling to gain trust.

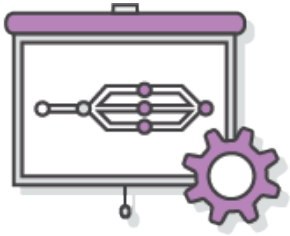
Continuous integration

Continuous delivery



Continuous deployment

Continuous Deployment Benefits



Automate the software release process

Improve developer productivity

Find and address bugs quickly

Deliver updates faster

f(innovation) = (culture * structure) tooling

Tooling should be decentralised, encouraging self service.

It should promote best practices without being restrictive.

It should be technology agnostic.

It should be the path of least resistance.

Continuous Delivery

From check-in to production

CI/CD + Release Automation

>90% of Amazon teams

12 years young

Rolling Deployments (zero downtime)

Health Checking

Versioned Artifacts & Rollbacks

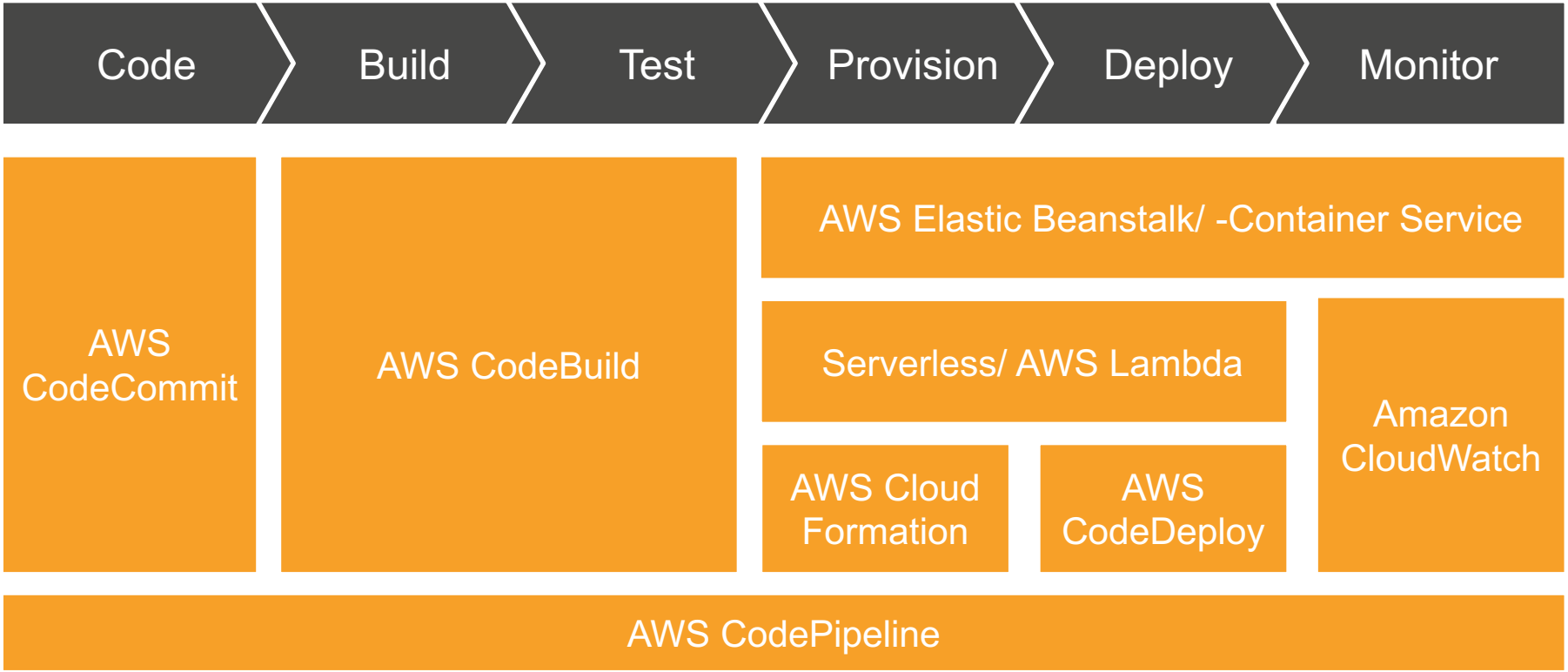
Thousands of teams +
Microservices architectures +
Multiple environments +
Continuous delivery?

= 50 million deployments a year

From epic feature releases
to many tiny releases.

AWS services help you
do the same.

Deployment, Administration & Monitoring



AWS CodeStar: Everything you need to Develop, Build, and Deploy applications on AWS.

AWS CodeStar Project Templates

Ruby on Rails

Web application

AWS Elastic Beanstalk
(runs in a managed application environment)

Ruby on Rails

Web application

Amazon EC2
(runs on virtual servers that you manage)

Java Spring

Web application

AWS Elastic Beanstalk
(runs in a managed application

Java Spring

Web application

Amazon EC2
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Demo Time!

$$f(\text{innovation}) = (\text{culture} * \text{structure})^{\text{tooling}}$$

Turn your innovative idea into reality. Start by spinning up all you need with AWS CodeStar.