

DEVOPS

-- AN IT MINDSET --

If you're not writing software to manage them (Ops), you're not surviving.

AGENDA

- Context
- Pre-Agile/ Pre-DevOps Days
- Little History
- Waterfall, CI, CD, DevOps Nirvana
- Culture, Tools, Stories, Everything Else

SOFTWARE MOVES FASTER TODAY/ LIFE OF A CODE

- Startups can now take on giants with little to no funding ahead of time
- Getting your software into the hands of millions is a download away
- Your ability to move fast is paramount to your ability to fight off disruption

*Software creation and distribution is easier
and faster than ever*

*First, we need to understand a little bit
about software release processes*

RELEASE PROCESSES HAVE FOUR MAJOR PHASES

- **Source:** Create, review & check in the code.
- **Build:** Compile code, Run unit tests, Style checkers, Gather Code metrics
- **Test:** Integration tests with other systems, Load testing, UI tests, Penetration testing
- **Production:** Deployment to production environments

THE SOFTWARE DELIVERY MODEL HAS DRASTICALLY CHANGED..

Old software delivery model



New software delivery model



PRE-AGILE/ PRE - DEVOPS DAYS

Sequential Development



Silo culture

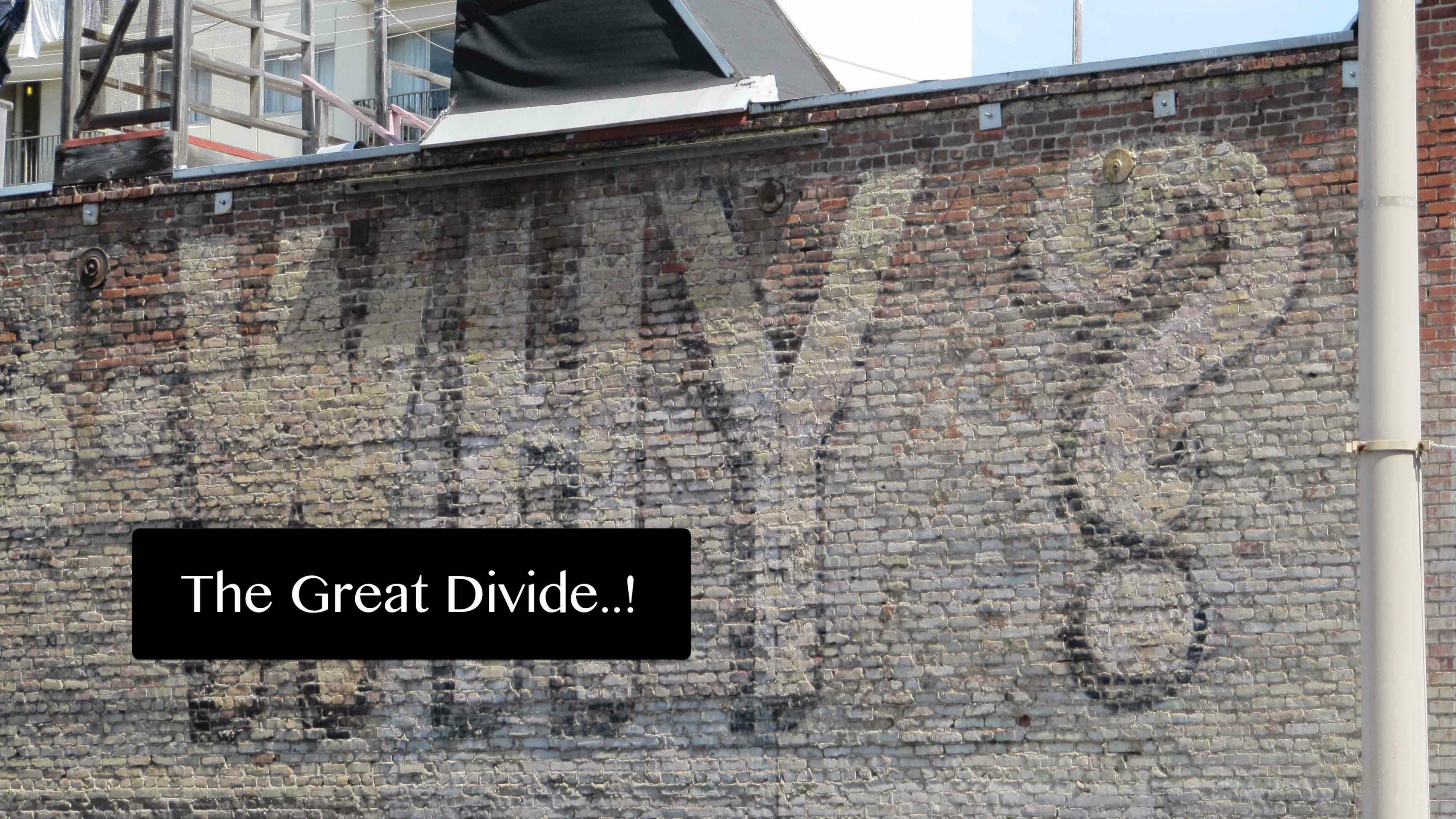


A close-up photograph of a person's hands holding a tin can telephone. One hand holds a shiny, metallic tin can, and the other hand holds a wooden stick with a smaller tin can attached to its end. The person is wearing a blue and white striped shirt. In the bottom left corner, there is a black rectangular box containing the text.

Communication
Frustration

Complex/ Manual Escalations





The Great Divide..!

A dramatic photograph of two firefighters in full protective gear, including red helmets with numbers 12 and 28, and silver thermal protective suits. They are spraying a powerful stream of water from a hose onto a massive, intense orange and yellow fire. The background is filled with thick smoke and flames. In the top right corner, a black rectangular box contains the word "Operations" in white, sans-serif capital letters.

Operations

Developers





“It’s not my machines,
it’s your code!”

“It’s not my code, it’s
your machines!”

$$LR = (GR/TH) \times I \times H$$

Lost
Revenue

Gross
Yearly
Revenue

Total yearly
business
hours

%
impact

hours
of
outage

Unplanned downtime costs
organizations an average of
\$5,600/minute
\$46,000,000/year

The point is that most people understand that DevOps is the art of speeding IT up through automation and strong communication. But the really effective DevOps organizations understand that in order to account for when things go wrong, they also need to automate the communication

“Fear is the path to the dark side. Fear leads to anger. Anger leads to hate. Hate leads to suffering.” – Yoda

LITTLE HISTORY

- 2007 - Patrick Debois, a software development consultant, had a goal of learning all aspects of IT. Patrick had always been bothered by the differences between how Dev and Ops worked, but he became particularly frustrated with the challenges of managing work across the two groups on his projects.
- 2008 - Andrew Shafer posted an idea for an agile infrastructure “birds of a feather” session at the Agile 2008 Conference.

LITTLE HISTORY CONTD..

- 2009 - John Allspaw, senior vice president of technical operations at Flickr, and Paul Hammond, director of engineering at Flickr, gave a presentation at the O'Reilly Velocity Conference in San Jose, “10+ Deploys per Day: Dev and Ops Cooperation at Flickr.” The presentation laid the groundwork for how Dev and Ops can effectively work together to improve software deployment. #DevOpsDays
- 2010 - DevOpsDays were held in Australia and the U.S. Over time, there were more and more DevOpsDays that were hosted in different countries and cities around the world.

LITTLE HISTORY CONTD..

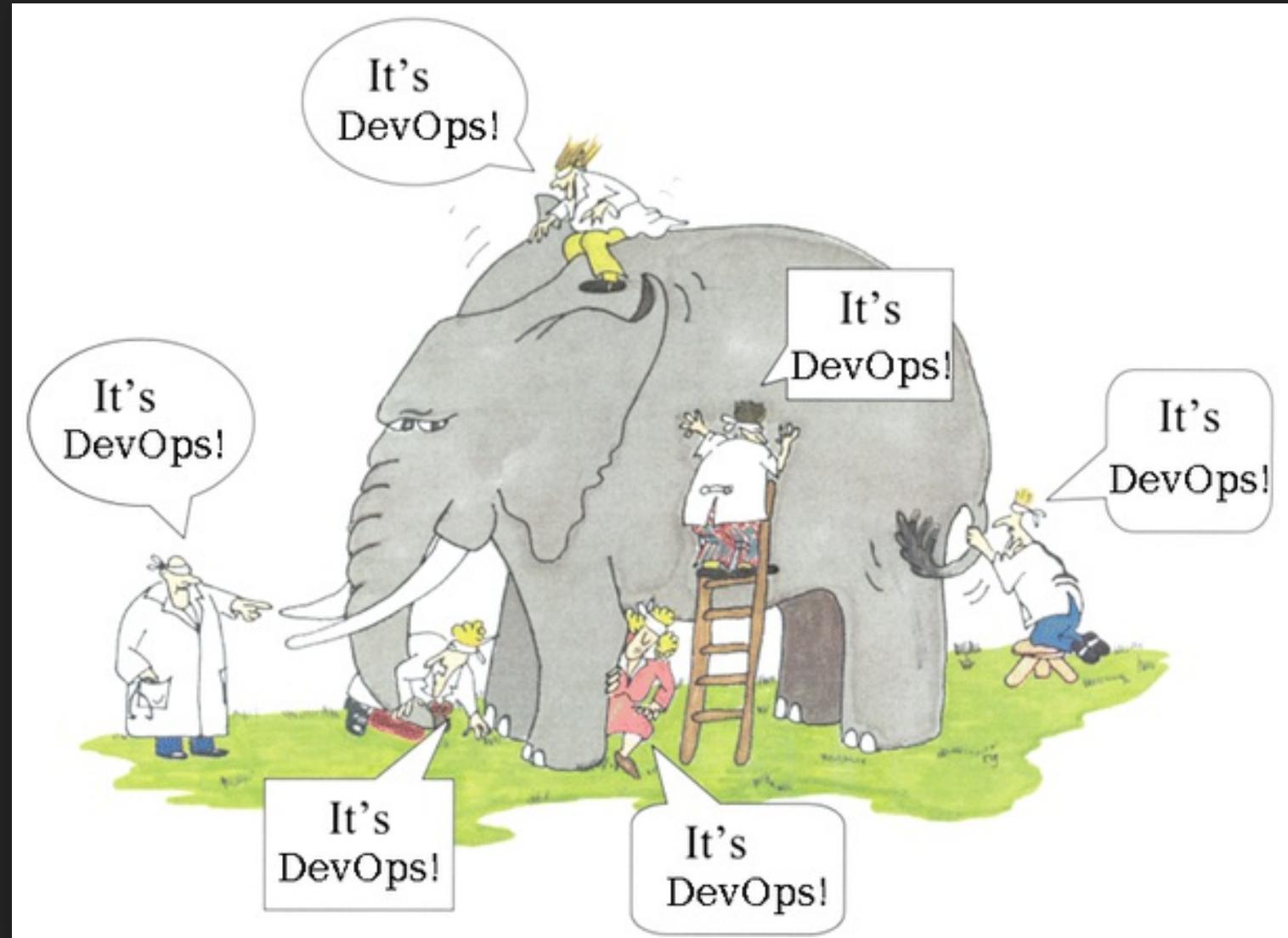
- 2011 - Up until 2011, the DevOps movement has been fueled by individuals and open source tools with little attention from analysts or vendors.
- 2012 - By 2012 DevOps was quickly turning into a buzzword and DevOpsDays continued to grow.
- 2014 - Large companies such as Target, Nordstrom and LEGO became some of the first companies to bring DevOps into the enterprise.

WHAT IS DEVOPS NOT?

- It's Not NoOps
- It's Not (Just) Tools
- It's Not (Just) Culture
- It's Not (Just) Devs and Ops
- It's Not (Just) A Job Title
- It's Not Everything



What is DevOps?



A group of men in historical military-style uniforms are marching in a procession. They are wearing red and green jackets with white piping, white breeches, and black hats with plumes. Some have white sashes across their chests. They are carrying large drums and drumsticks. The background shows a street with buildings and other people.

Culture

Automation



Lean



Measurement



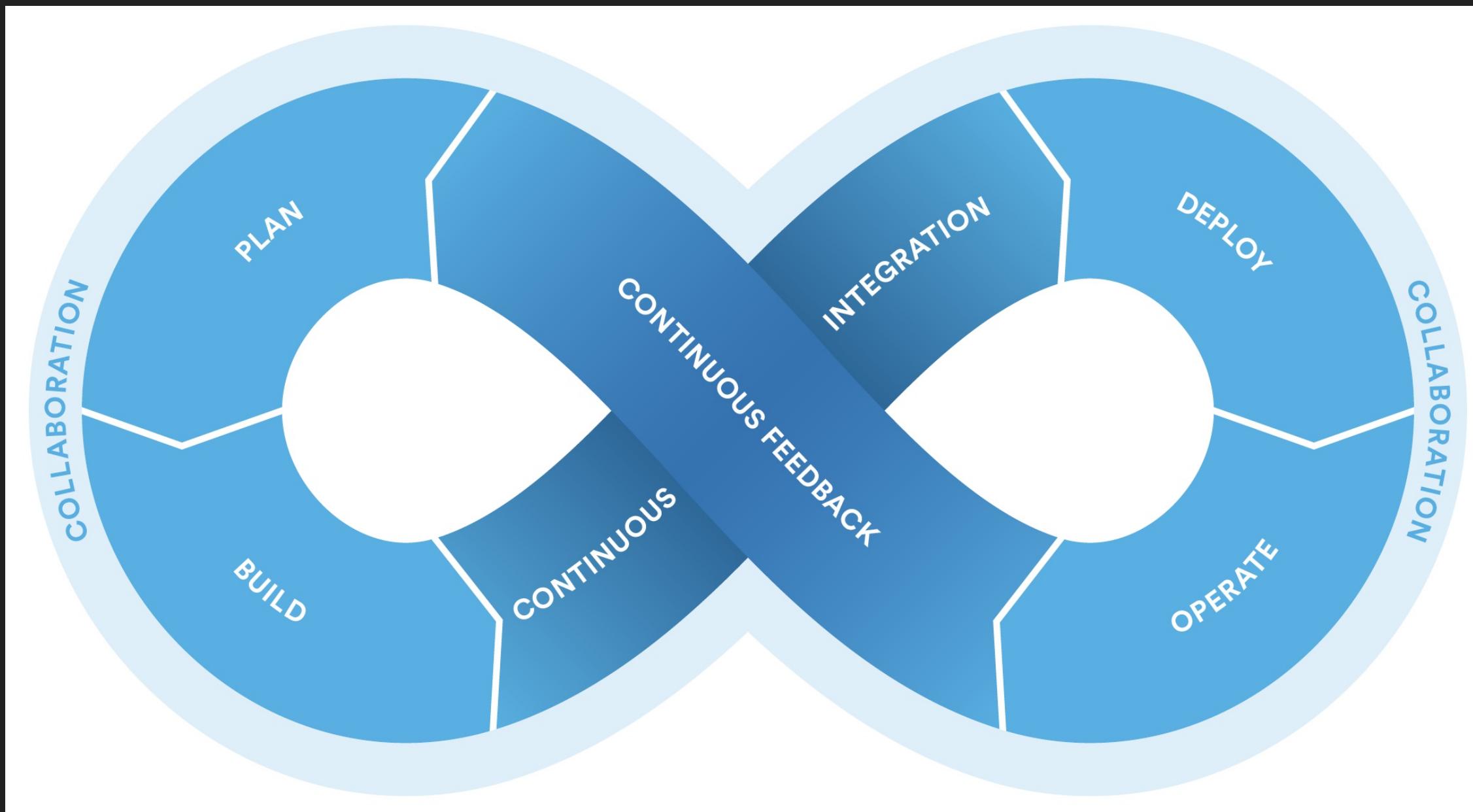
A close-up photograph of a plate of nachos. The nachos are topped with melted white cheese, which is being pulled apart by two hands. One hand is on the left, wearing a blue shirt, and the other is on the right, with red-painted fingernails. The nachos also contain tortilla chips, sliced beef, and diced tomatoes. The background is blurred.

Sharing

A photograph of a person's lower legs and feet as they jump over a puddle. They are wearing blue jeans and black and red patterned sneakers. Water splashes up from the impact of their feet hitting the water. The background is blurred.

You

DEVOPS WORKFLOW



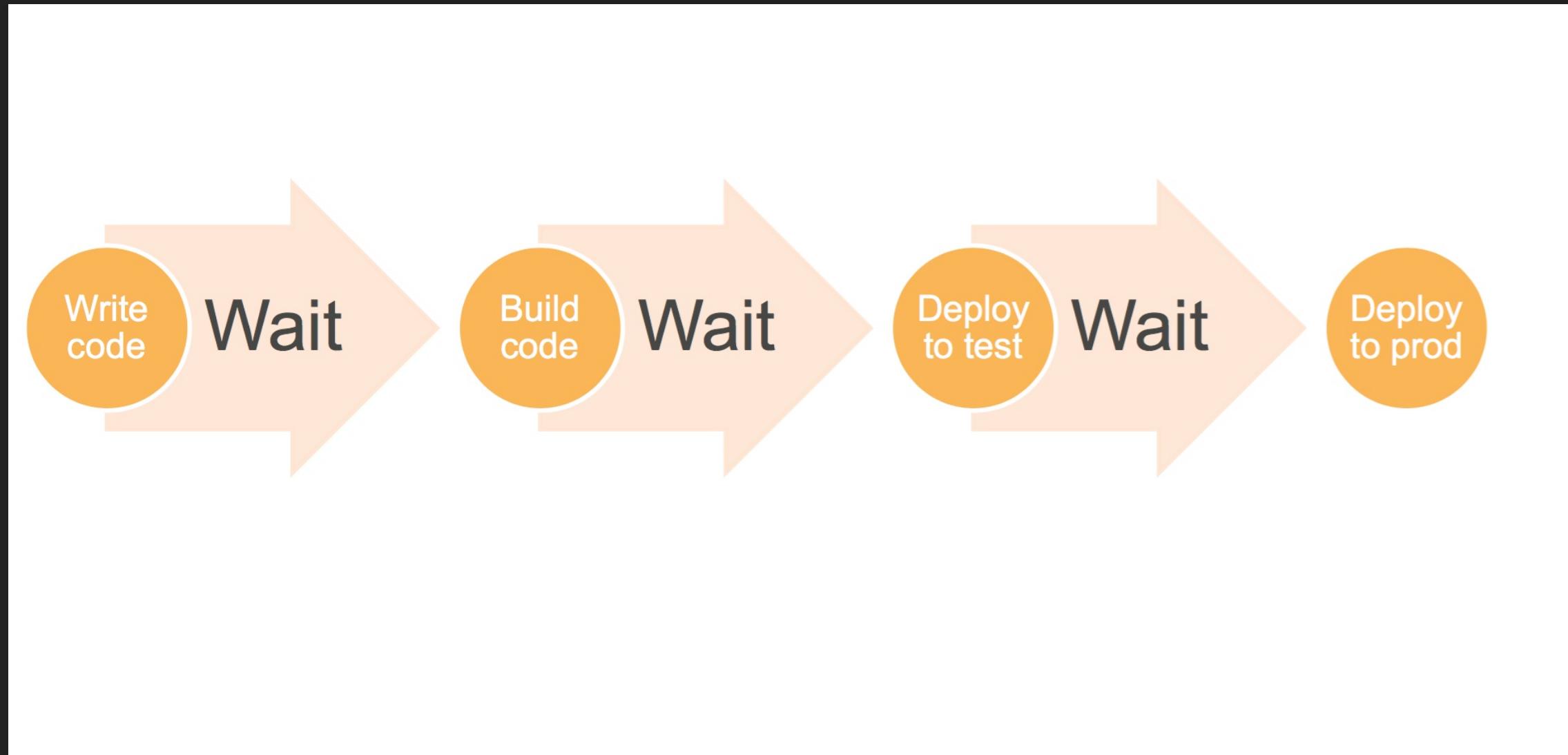
DEVOPS NIRVANA

Paint the wall with awareness

WATERFALL DEVELOPMENT

Development teams would write a bunch of code for months. Then those teams would merge their code in order to release it. Their are different versions of code and have so many changes that the actual integration step could take days.

WE WERE JUST WAITING..



CONTINUOUS INTEGRATION

Continuous integration is often the first step down the path toward DevOps maturity. It is the practice of quickly integrating newly developed code with the main body of code that is to be released.

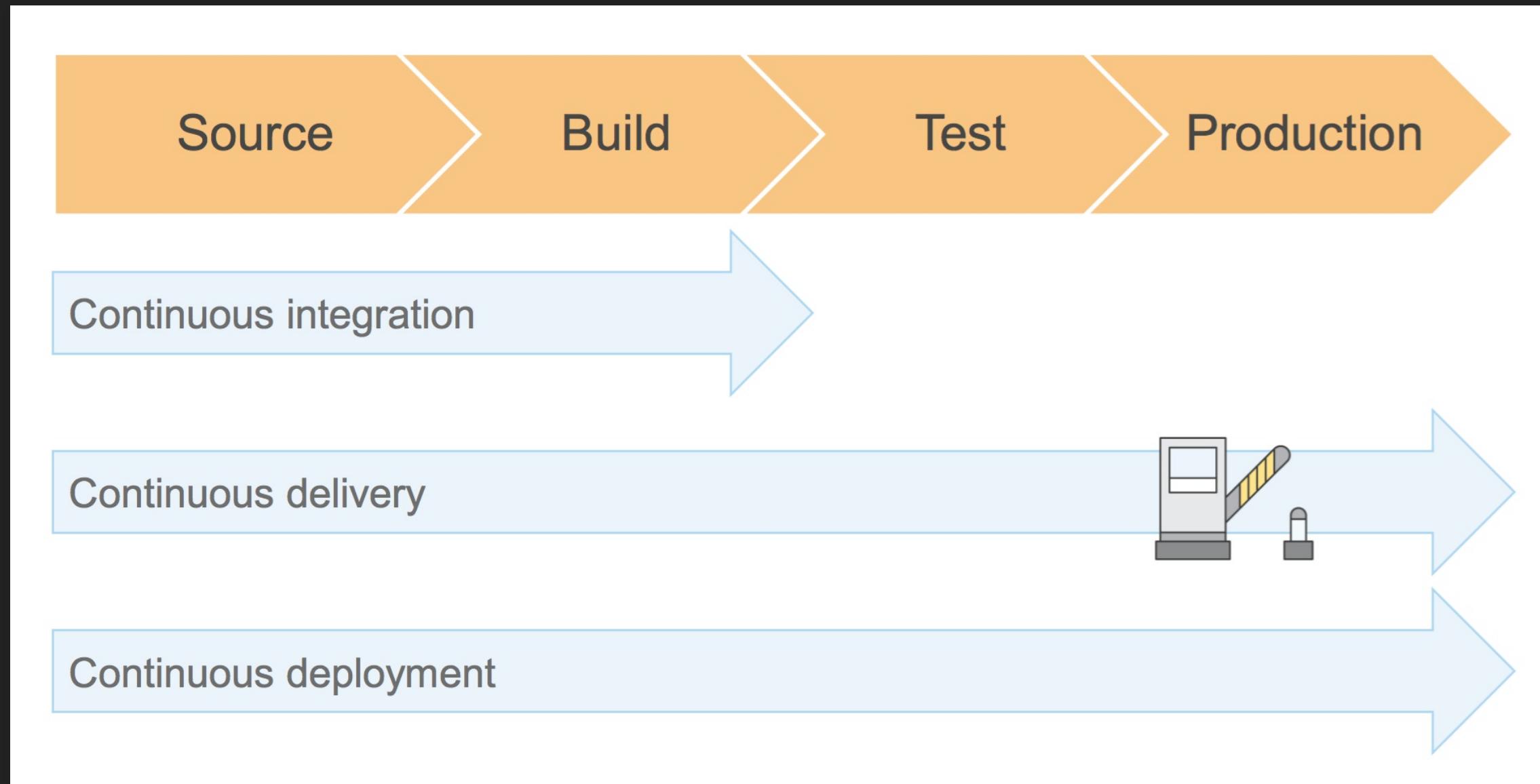
CONTINUOUS DELIVERY

It is an extension of continuous integration. It's the practice of having the code base continuously in a ready-to-deploy state.

CONTINUOUS DEPLOYMENT

It is DevOps nirvana, is the most advanced evolution of continuous delivery. It's the practice of deploying all the way into production without any human intervention.

RELEASE PROCESSES LEVELS..



STORIES

Netflix, Etsy, Amazon, Pinterest, Flicker, IMVU and Google
are popular examples of companies doing continuous
deployment.

GOOGLE DEV AND OPS - SRE

- 15,000 engineers, working on 4,000+ projects
- All code is checked into one source tree (billions of files!)
- 5,500 code commits/day
- 75 million test cases are run daily

"Automated tests transform fear into boredom." -- Eran Messeri, Google

AMAZON

AWS Summit

**Thousands of teams +
Microservices architecture +
Multiple environments +
Continuous delivery**

= 50 million deployments a year

 amazon
web services

50MM deploys/year = 136K deploys/day

NETFLIX - SIMIAN ARMY



- Chaos Monkey
- Chaos Gorilla
- Chaos Kon
- Latency Monkey
- Conformity Monkey
- Security Monkey
- Doctor Monkey
- Janitor Monkey

AWS Outage 2014: Out of our 2700+ production Cassandra nodes, 218 were rebooted. 22 Cassandra nodes did not reboot successfully.

ESTY..

avg 50 deploys/
day

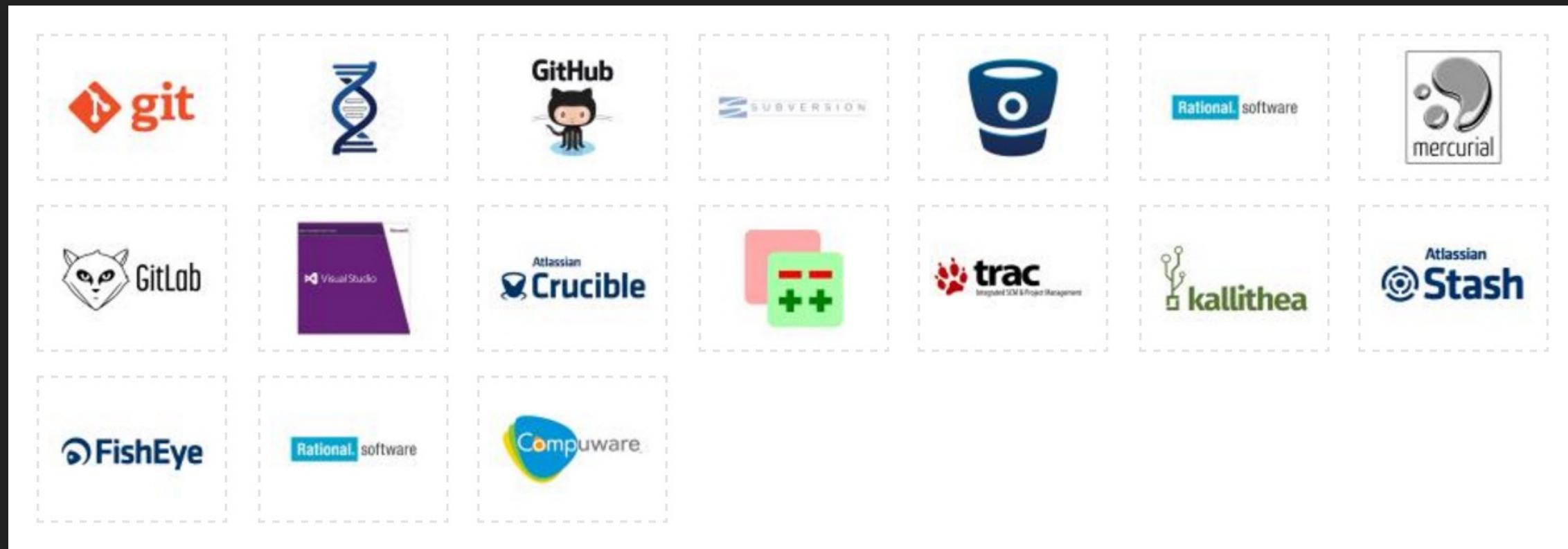
AMAZON, GOOGLE, NETFLIX..

COMPANY	DEPLOY FREQUENCY	DEPLOY LEAD TIME	RELIABILITY	CUSTOMER RESPONSIVENESS
Amazon	23,000/day	minutes	high	high
Google	5,500/day	minutes	high	high
Netflix	500/day	minutes	high	high
Facebook	1/day	minutes	high	high
Twitter	3/week	minutes	high	high
Typical enterprise	once every 9 months	months or quarters	low/medium	low/medium

DEVOPS TOOLING

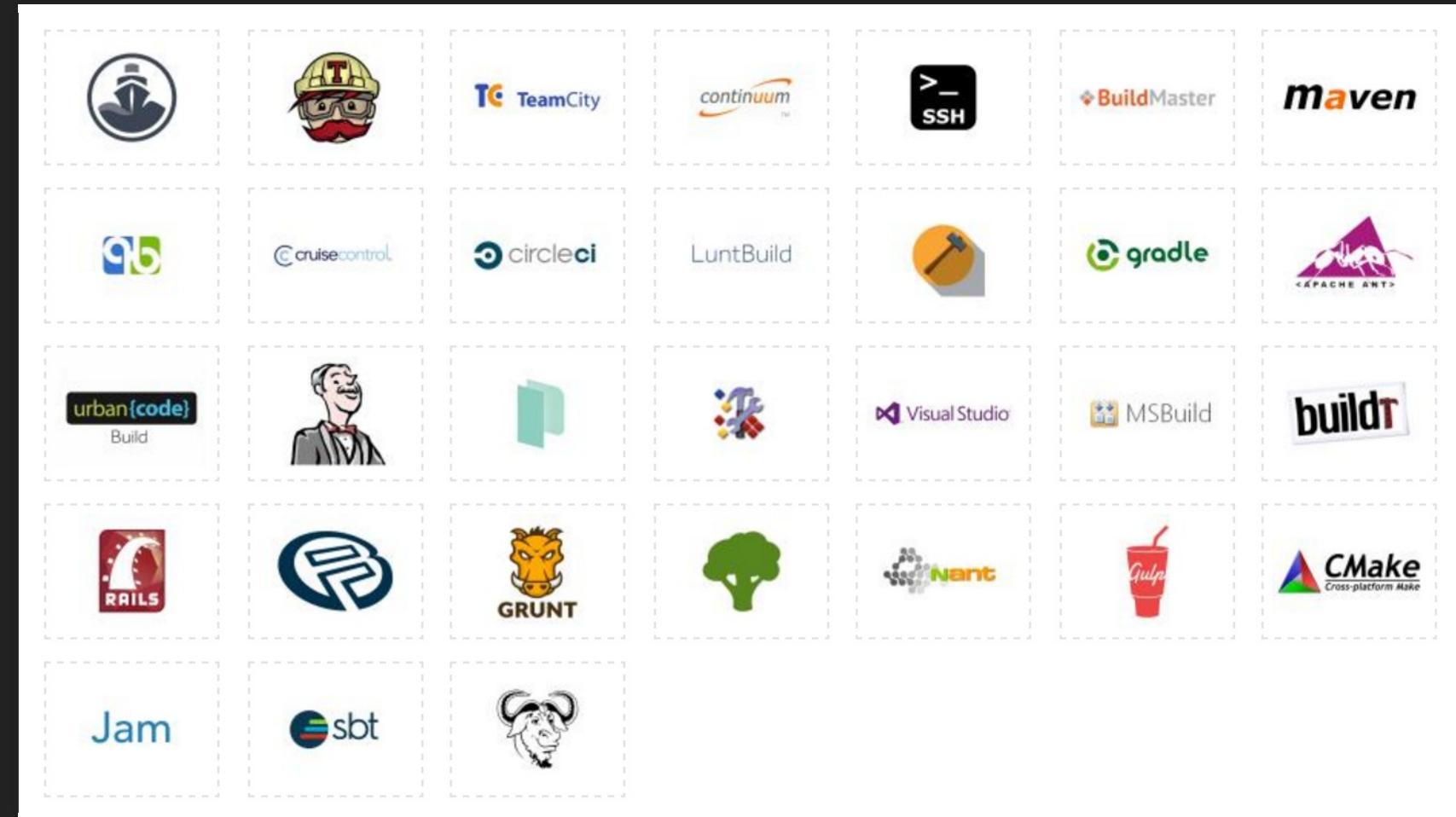
- Source Code Repository
- Build Server
- Configuration Management
- Virtual Infrastructure
- Test Automation
- Pipeline Orchestration
- Messaging / Collaboration
- Business Intelligence
- Security

SOURCE CODE REPOSITORY



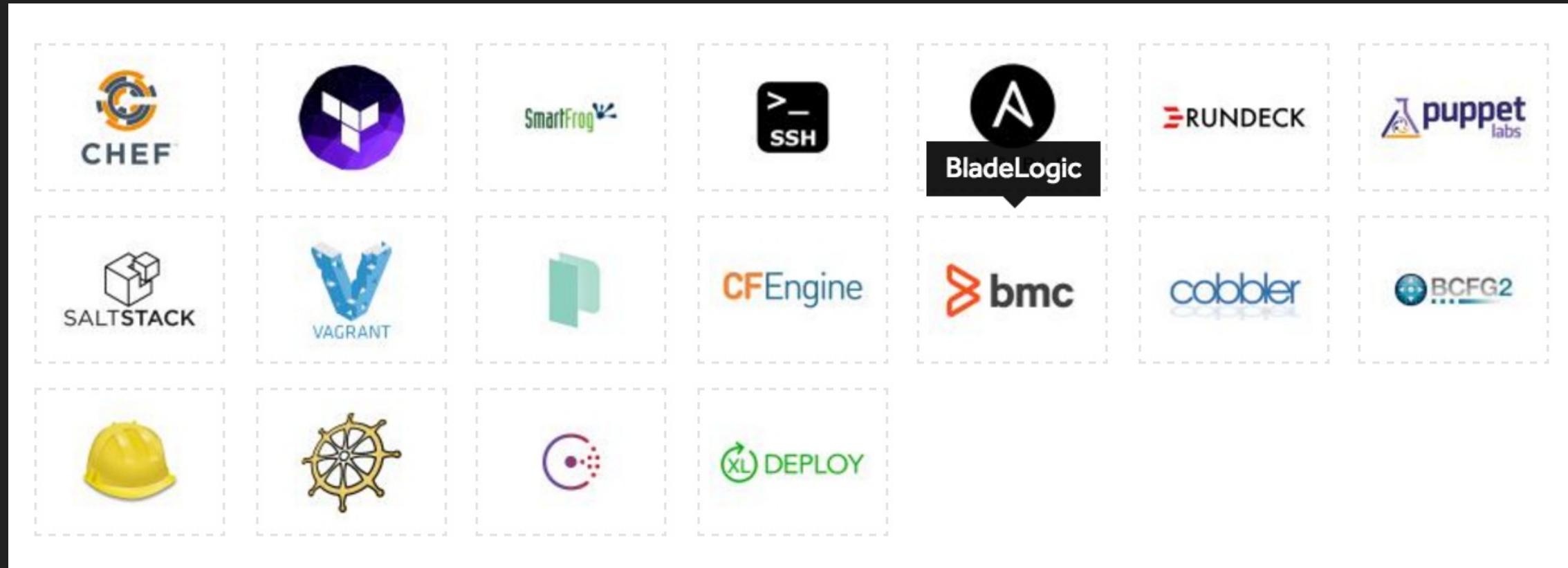
Source control is a major component of continuous integration.

BUILD SERVER



The build server is an automation tool that compiles the code in the source code repository into executable code base.

CONFIGURATION MANAGEMENT



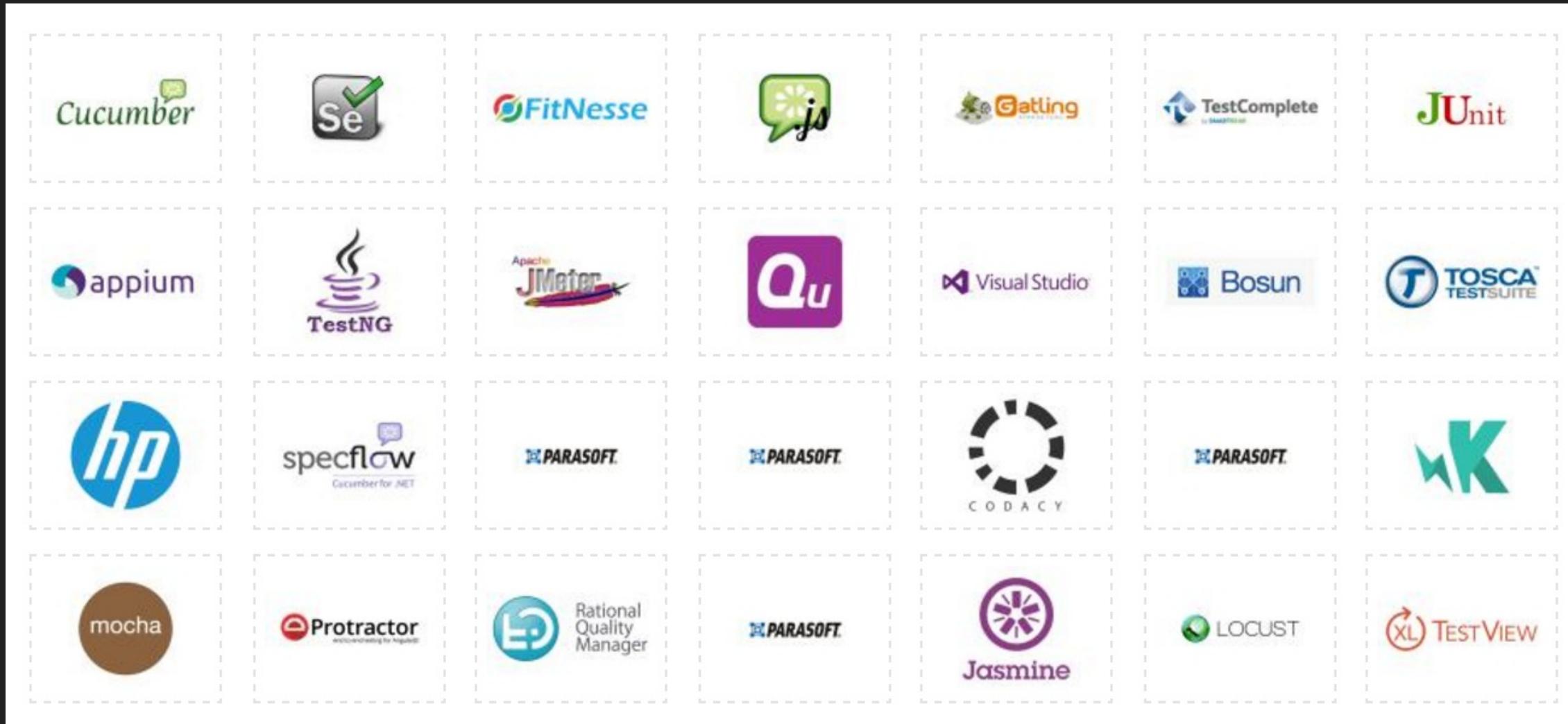
Configuration management defines the configuration of a server or an environment.

VIRTUAL INFRASTRUCTURE



*Virtual infrastructures (Cloud / IaaS / PaaS)
combined with automation tools to
empower organizations practicing DevOps
with the ability to configure a server
without any fingers on the keyboard.*

TEST AUTOMATION



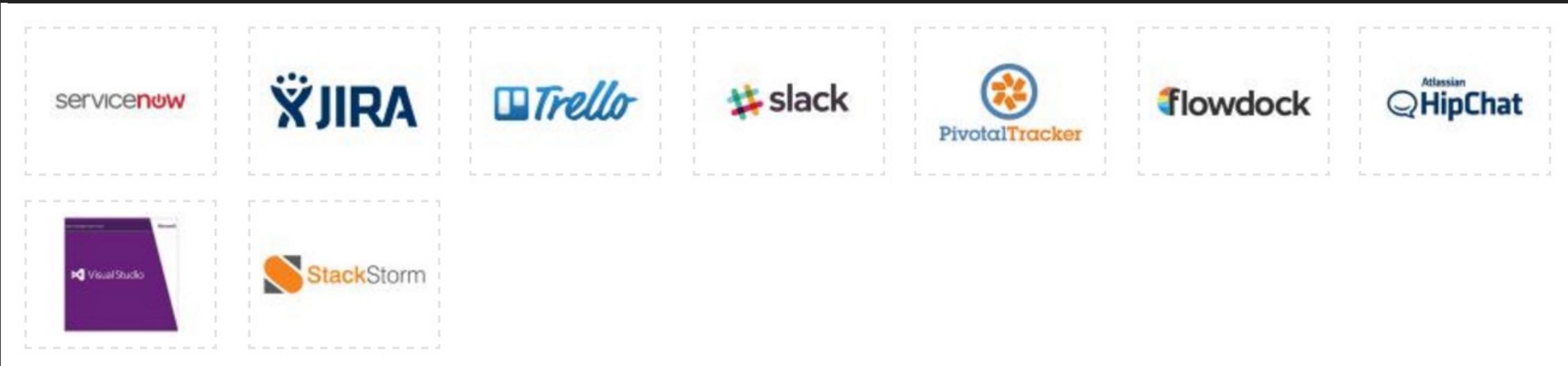
DevOps testing focuses on automated testing within your build pipeline to ensure that by the time that you have a deployable

PIPELINE ORCHESTRATION



Configuration management defines the configuration of a server or an environment.

MESSAGING / COLLABORATION



Configuration management defines the configuration of a server or an environment.

BUSINESS INTELLIGENCE



Configuration management defines the configuration of a server or an environment.

SECURITY

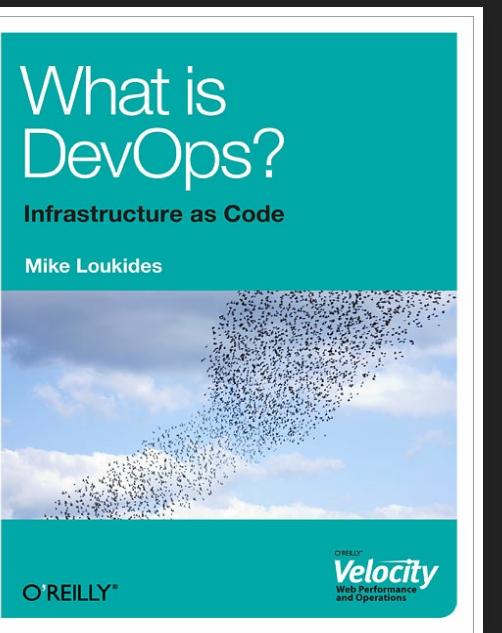
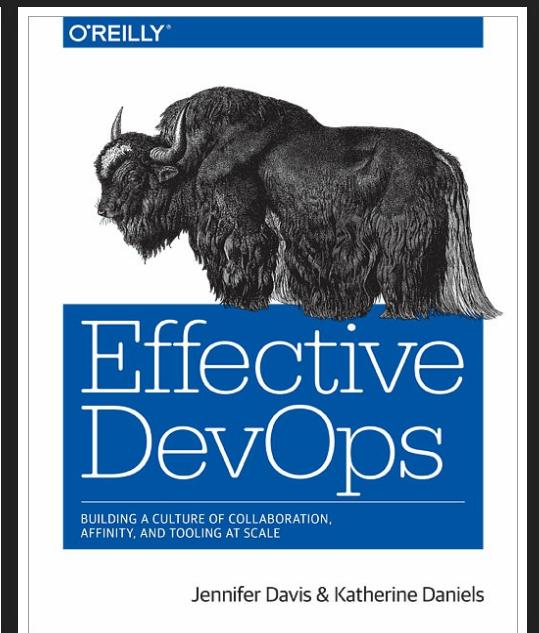
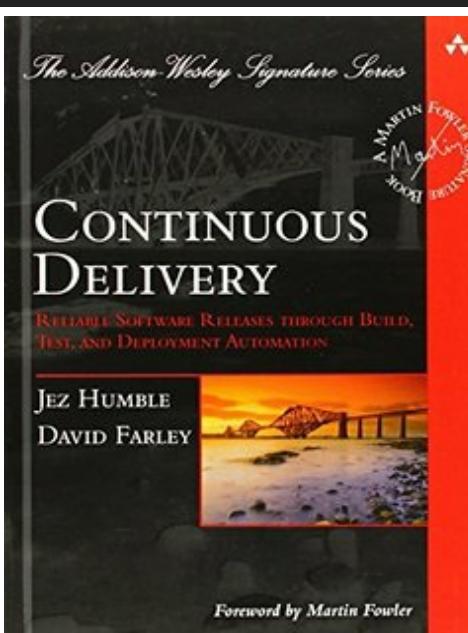
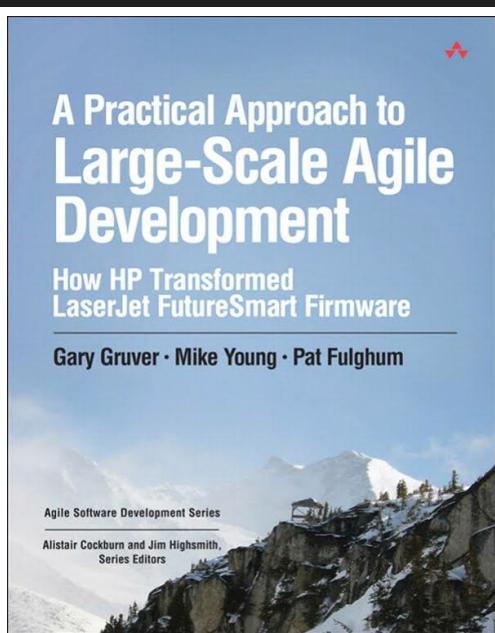
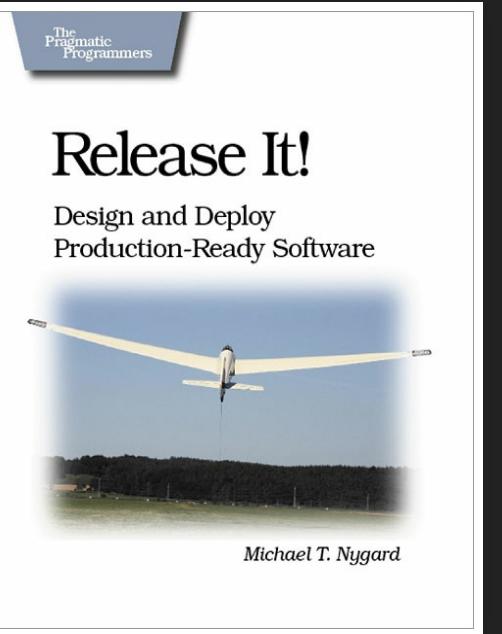
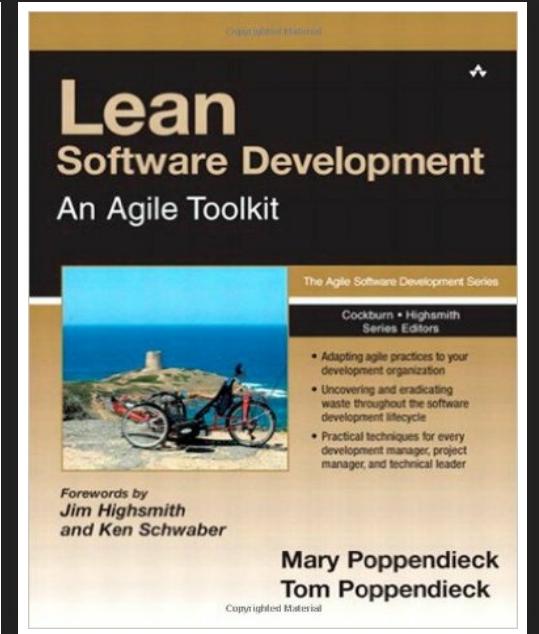
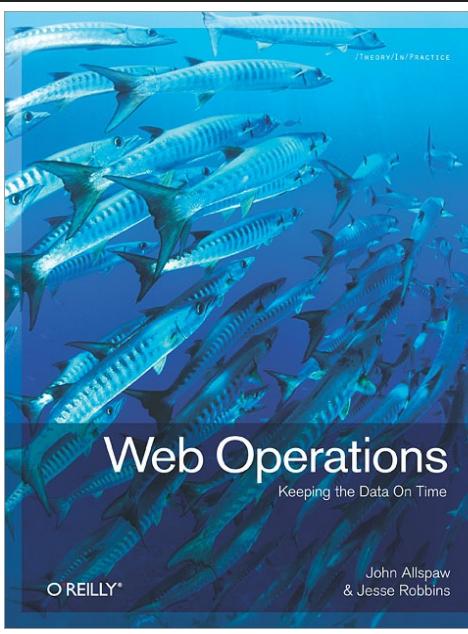
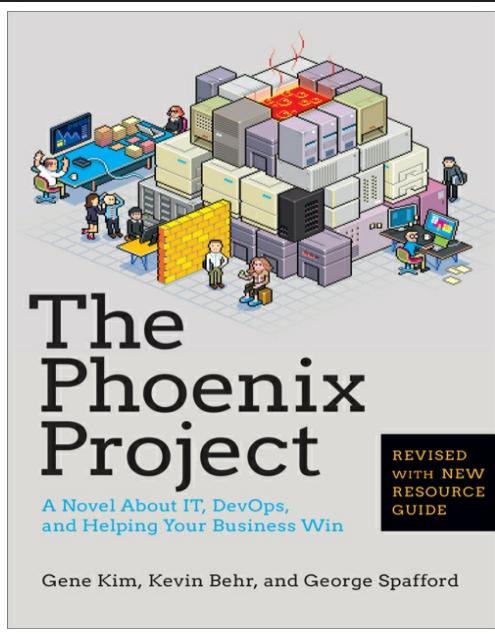


Configuration management defines the configuration of a server or an environment.



coffee

DEVOPS READING LIST



REFERENCES

