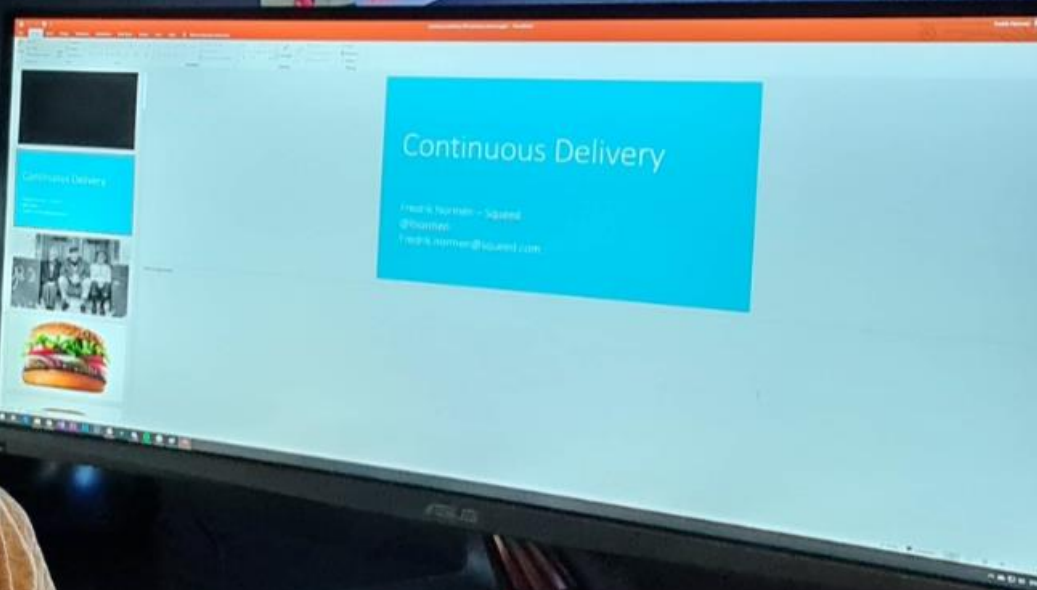


SECRET
LAB



Continuous Delivery

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Accelerate

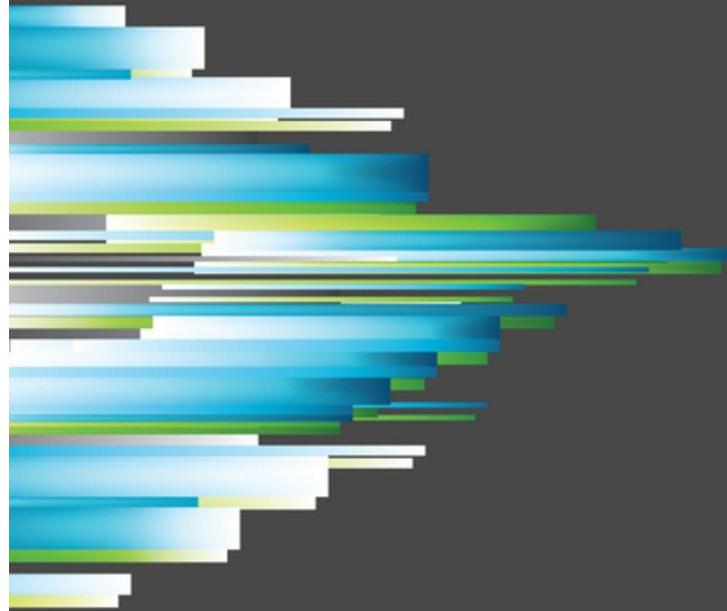


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THE SCIENCE OF DEVOPS
ACCELERATE

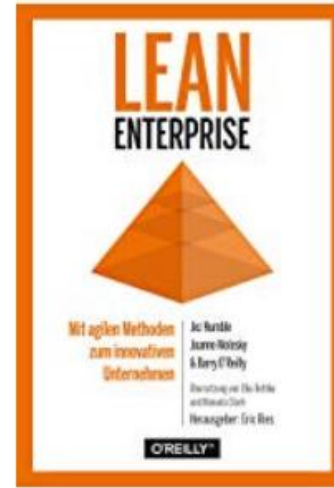
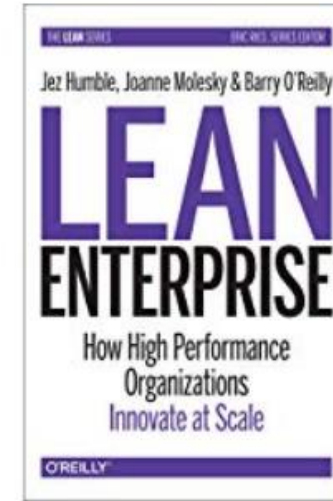
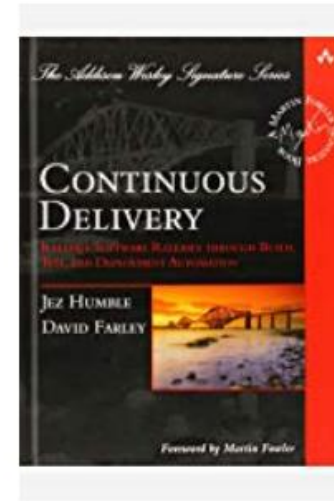
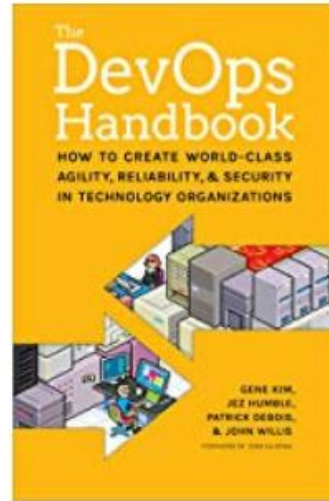
Building and Scaling High Performing
Technology Organizations



Nicole Forsgren, PhD
Jez Humble *and* Gene Kim



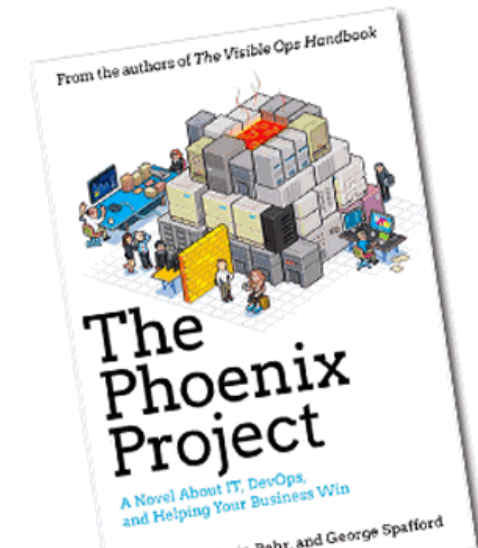
Jez Humble



Nicole Forsgren PhD



Gene Kim



State of DevOps Report

Presented by

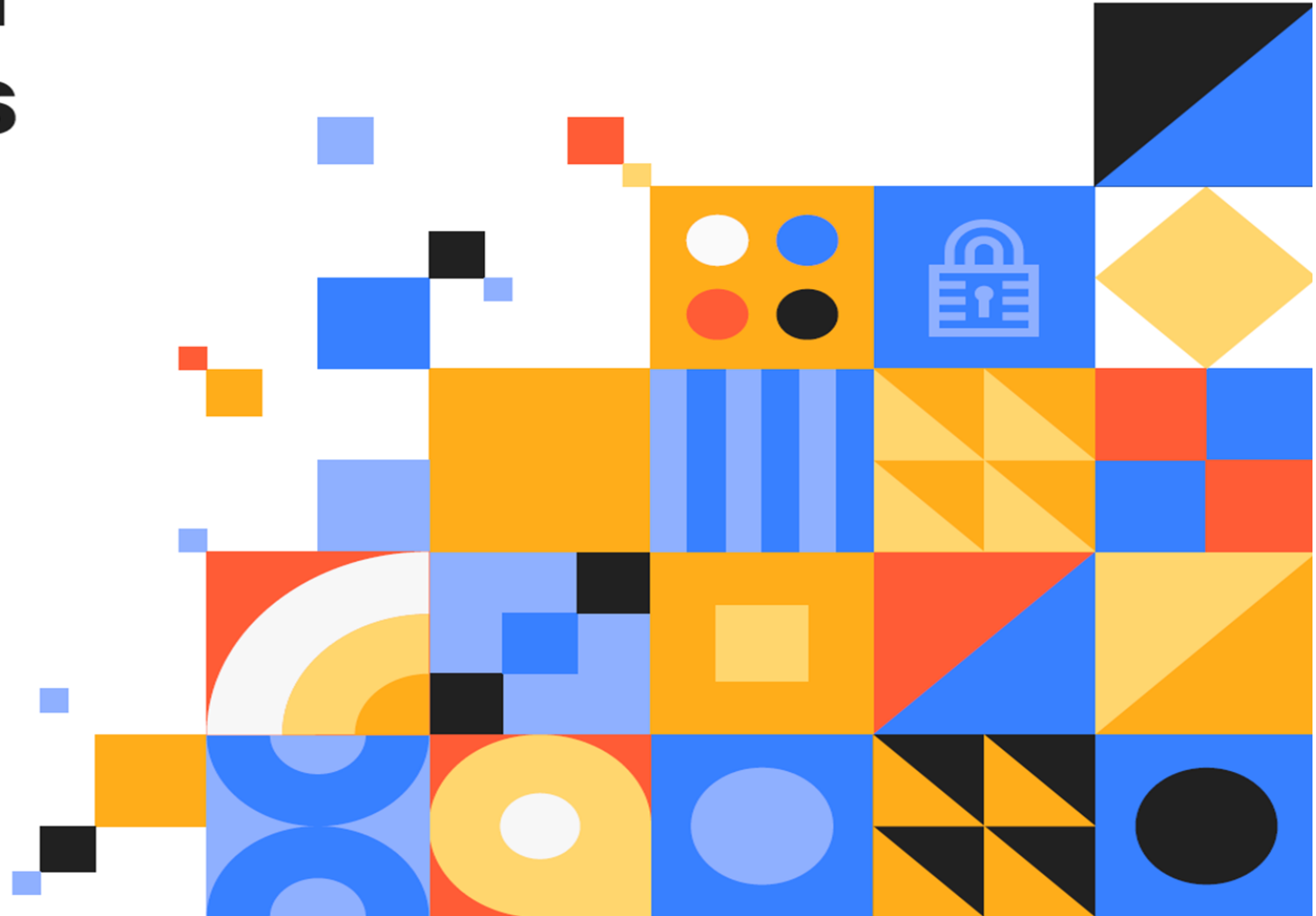


Sponsored by

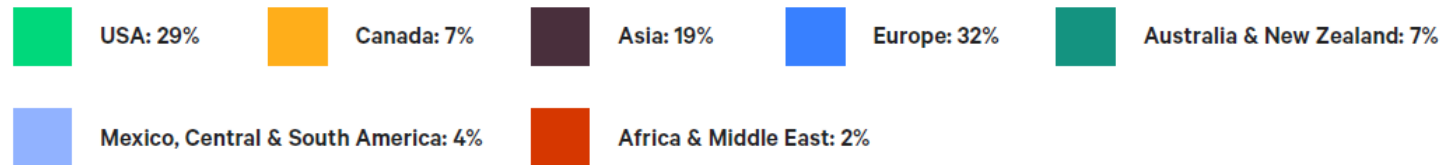
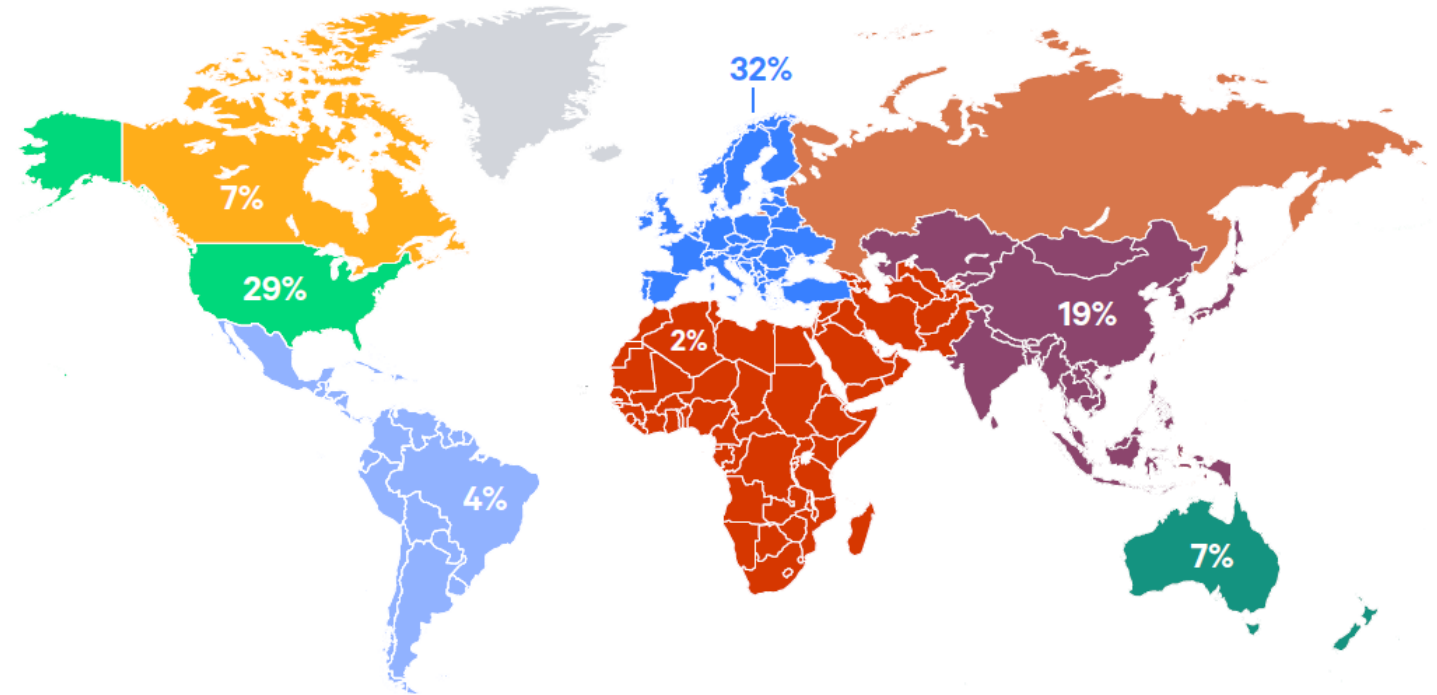
ANITIAN



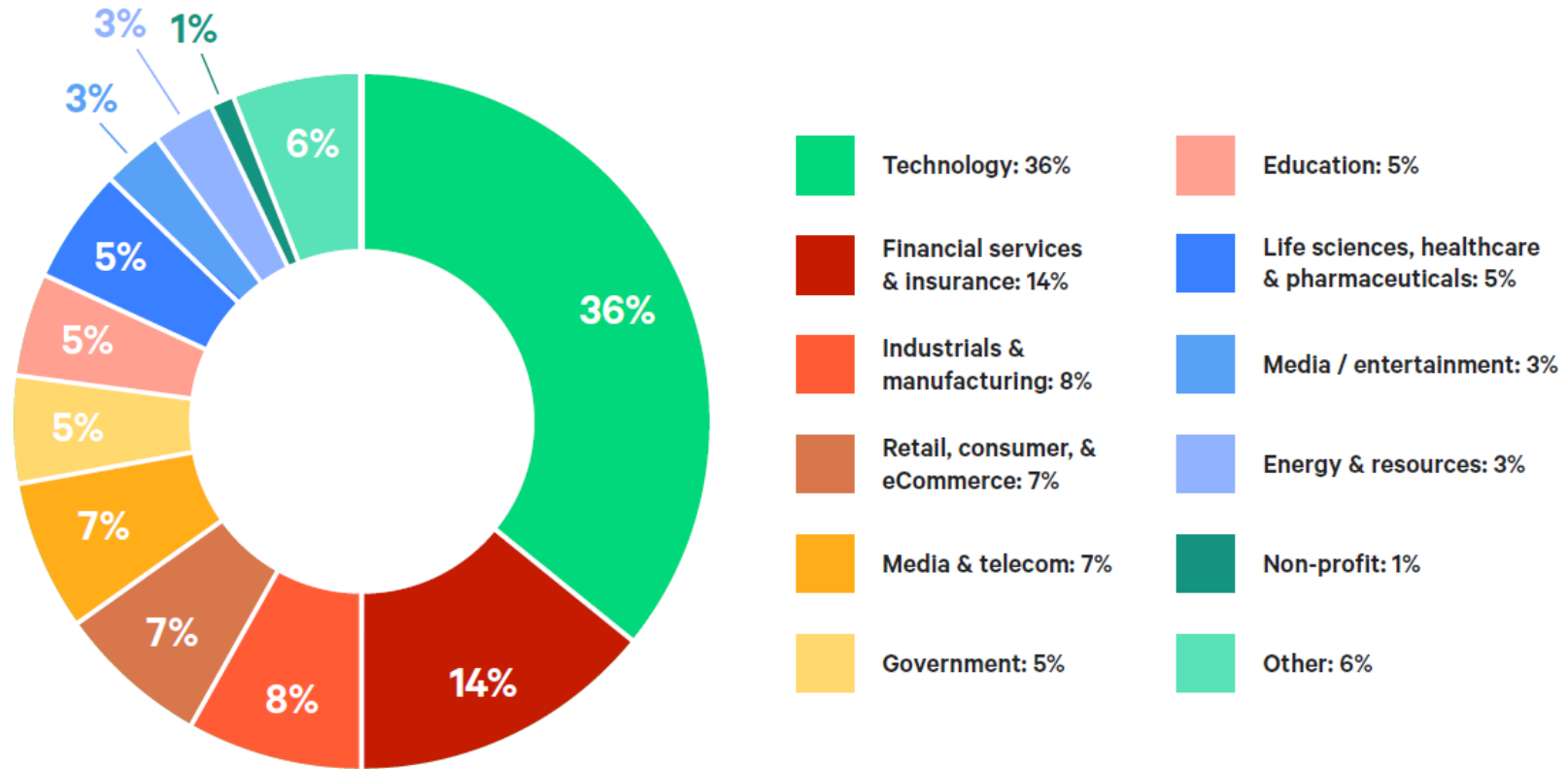
servicenow.



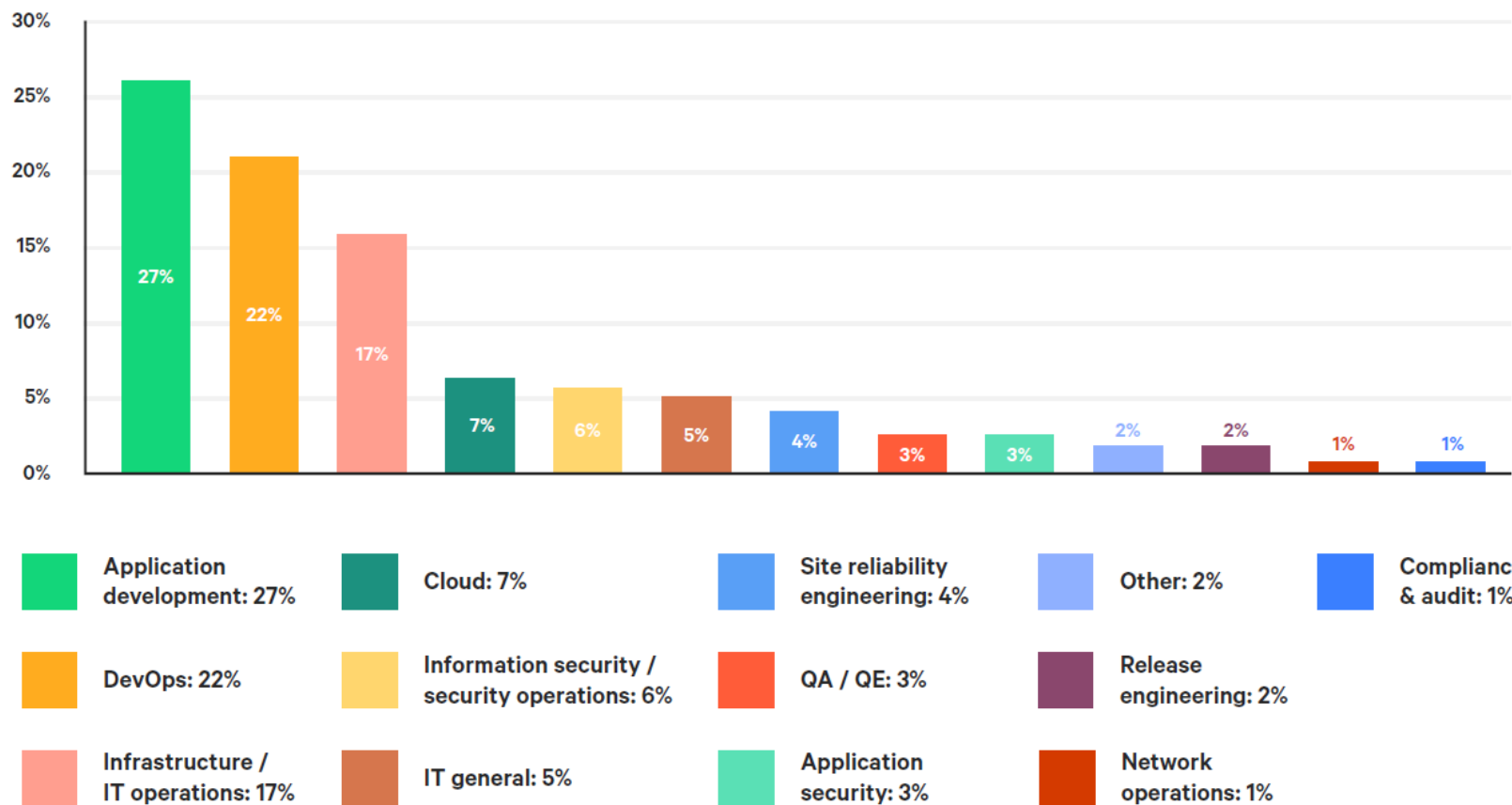
Responses by global region



Principal industry



Team



2018

Accelerate: State of DevOps

Strategies for a New Economy

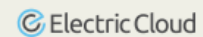
Presented by



Diamond Sponsor

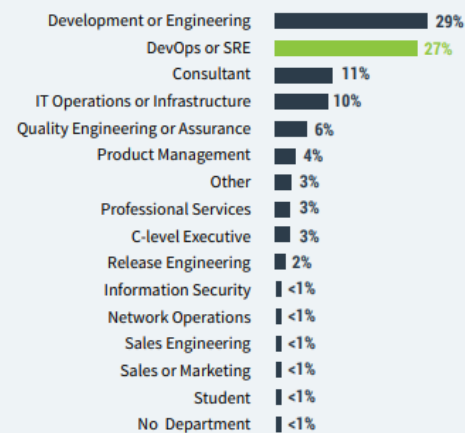


Gold Sponsors



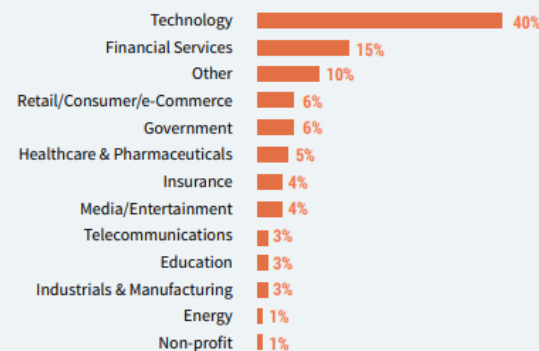
FIRMOGRAPHICS

DEPARTMENT

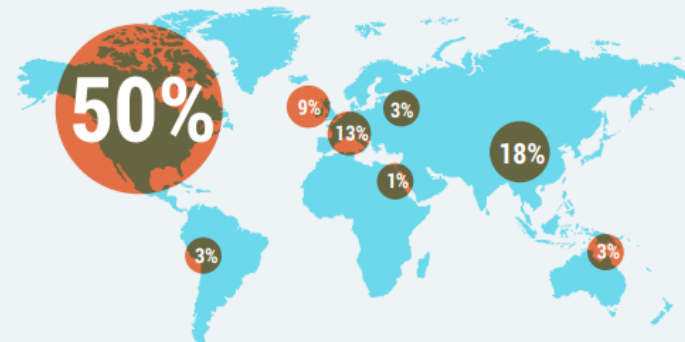


Participants who work in a DevOps team have increased since we began our study, reporting 16% in 2014, 19% in 2015, and 22% in 2016, and holding steady at 27% in 2017 and 2018.

INDUSTRY

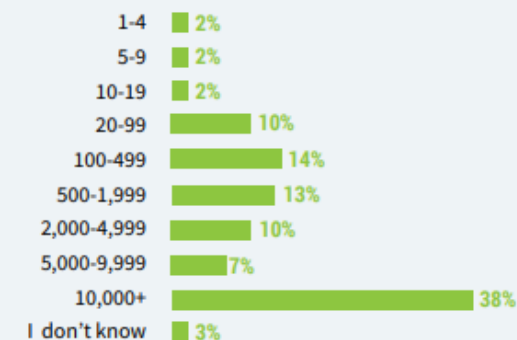


REGION



FIRMOGRAPHICS

NUMBER OF EMPLOYEES



The value of adopting DevOps



46 times more frequent code deployments



440 times faster lead time from commit to deploy



170 times faster mean time to recover from downtime

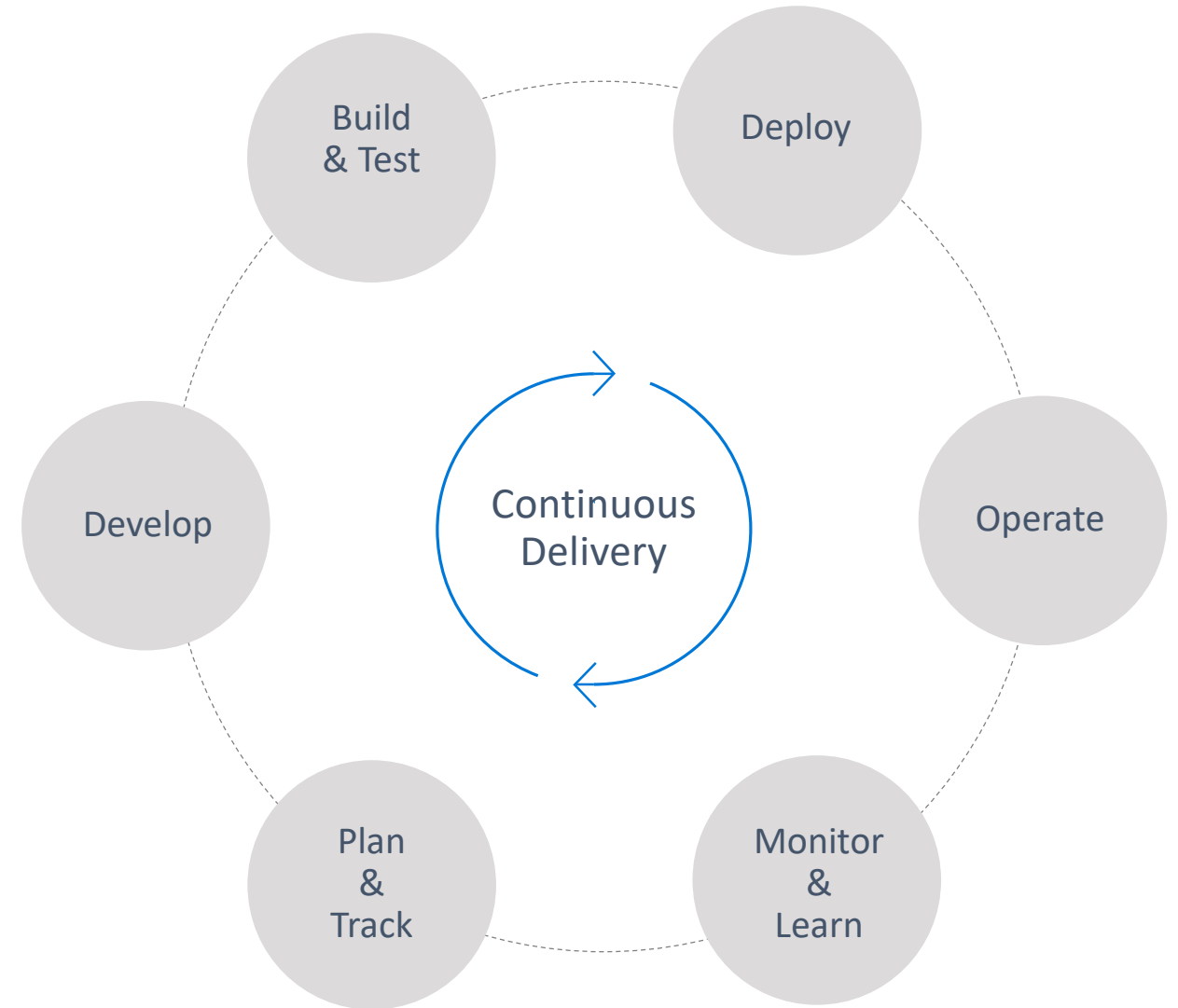


5 times lower change failure rate (1/5 as likely for a change fail)

What is DevOps?

People. Process. Products.

“DevOps is the union of **people**, **process**, and **products** to enable continuous delivery of value to your end users.”



High performance team



They understand that they don't have to trade speed for stability or vice versa, because by building quality in they get both.



High performance team focus on improving the right capabilities.

Capabilities



Continuous delivery



Architecture



Product and process



Lean management and monitoring



Cultural

Continuous delivery capabilities

Version
control

Deployment
automation

Continuous
integration

Trunk-based
development

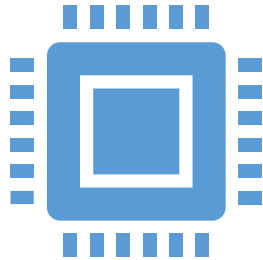
Test
automation

Test data
managment

Shift left on
security

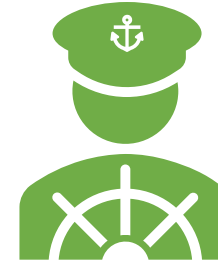
Continuous
delivery (CD)

Architecture capabilities



Loosely coupled architecture

Clean Architecture, Plug-in architecture and
Microservices etc.



Empowered teams

Let them decide the tools, let them have control
and ownership of the architecture.

The biggest contributor to continuous delivery — larger even than test and deployment automation

Product and process capabilities



Customer feedback



Value stream

Team knows the whole stream,
from business out to customers.



Working in small batches

Faster feedback, short lead times
and better communication etc.



Team experimentation

Let developer team gather
important information. Not from
someone outside. Must let them
come up with ideas and try them.

Lean management and monitoring capabilities



Change approval processes

Approval by external decrease stability, lead time and performance, deploy frequently and restore time.

Conclusion: Doesn't work with Manager or CAB.



Monitoring



Proactive notification

Raise awareness for customers and companies by providing useful information or alerting individuals to some upcoming activity or action



WIP limits



Visualizing work

Showing key quality and productive metrics and current status work (including defects).

Culture capabilities



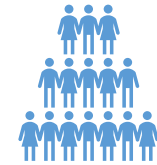
Supporting learning



Collaboration among teams



Job satisfaction



Transformational leadership

Leaders inspiring and motivating followers.

The Flaws in previous attempts to measure performance



Focus on "output" rather than "outcomes"



Focus on individual or local



Agile uses "Velocity" for predictability and manager use it for measure productivity and in worse case compare it against teams.



Based on stories/epic done.

In 2017



Low performance lose some ground of stability



The research suspect it's due to attempts to increase tempo "Work harder!" which fail to address the underlying obstacles to improved overall performance (for example, rearchitecture, process improvements, and automation).

Software Delivery Performance



Lead Time



Deployment
Frequency



Mean Time to
Restore (MTTR)



Change Fail
Percentage

Teams Performance

	High Performance	Medium Performance	Low Performance
Deployment Frequency	On demand (multiple deploys per day)	Between once per week and once per month	Between once per week and once per month
Lead Time	Less than one hour*	Between one week and one month	Between one week and one month
MTTR	Less than one hour	Less than one day	Between one day and one week
Change Failure Rate	0-15%	0-15%	31-45%

* From commit to running code in production

Capabilities



Continuous delivery



Architecture



Product and process



Lean management and monitoring



Cultural

