

Inner Development Loop

With Java on Kubernetes

Thomas Vitale
GOTO Copenhagen
Oct 5th, 2022

@vitaletomas

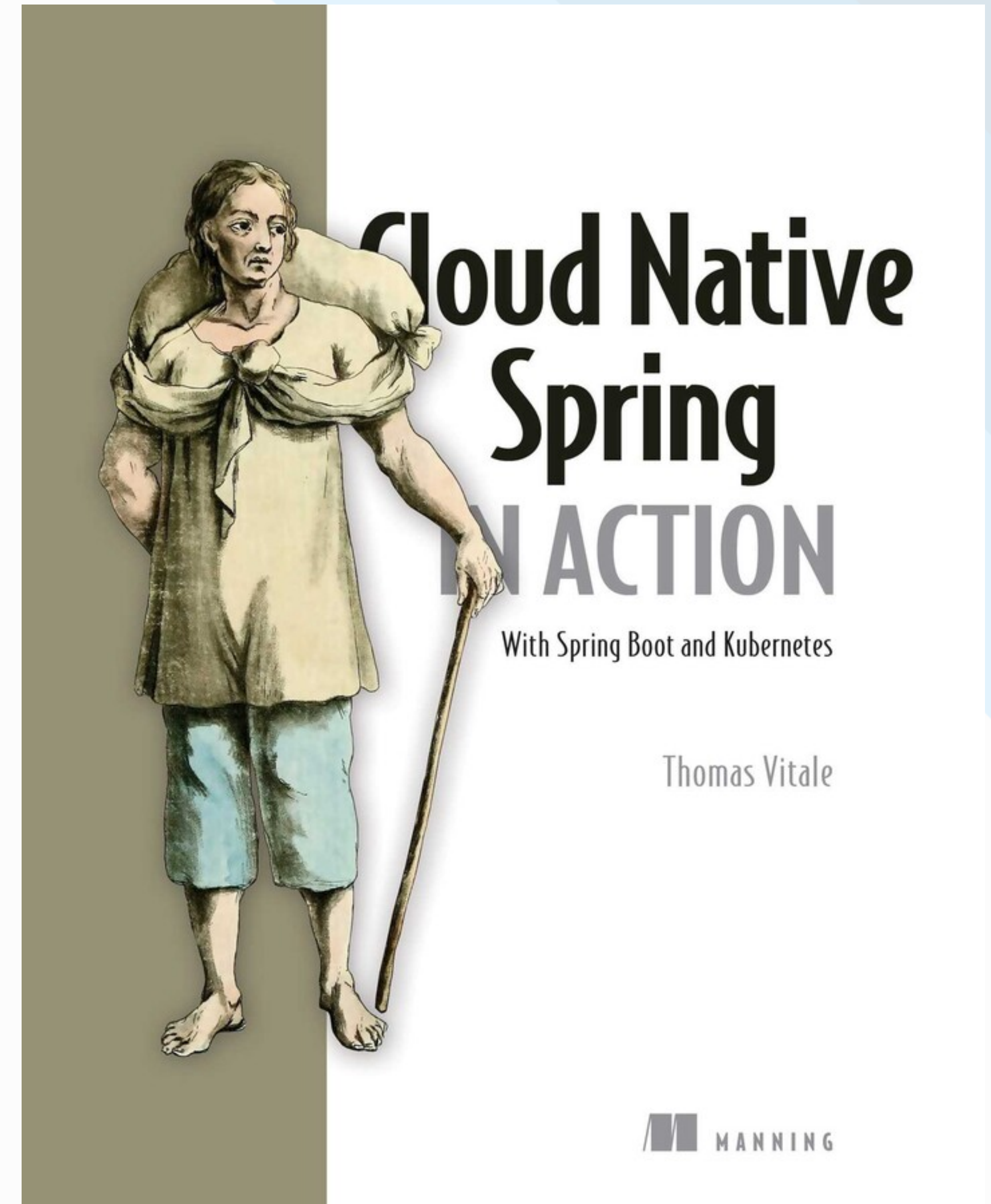
Thomas Vitale

Systematic

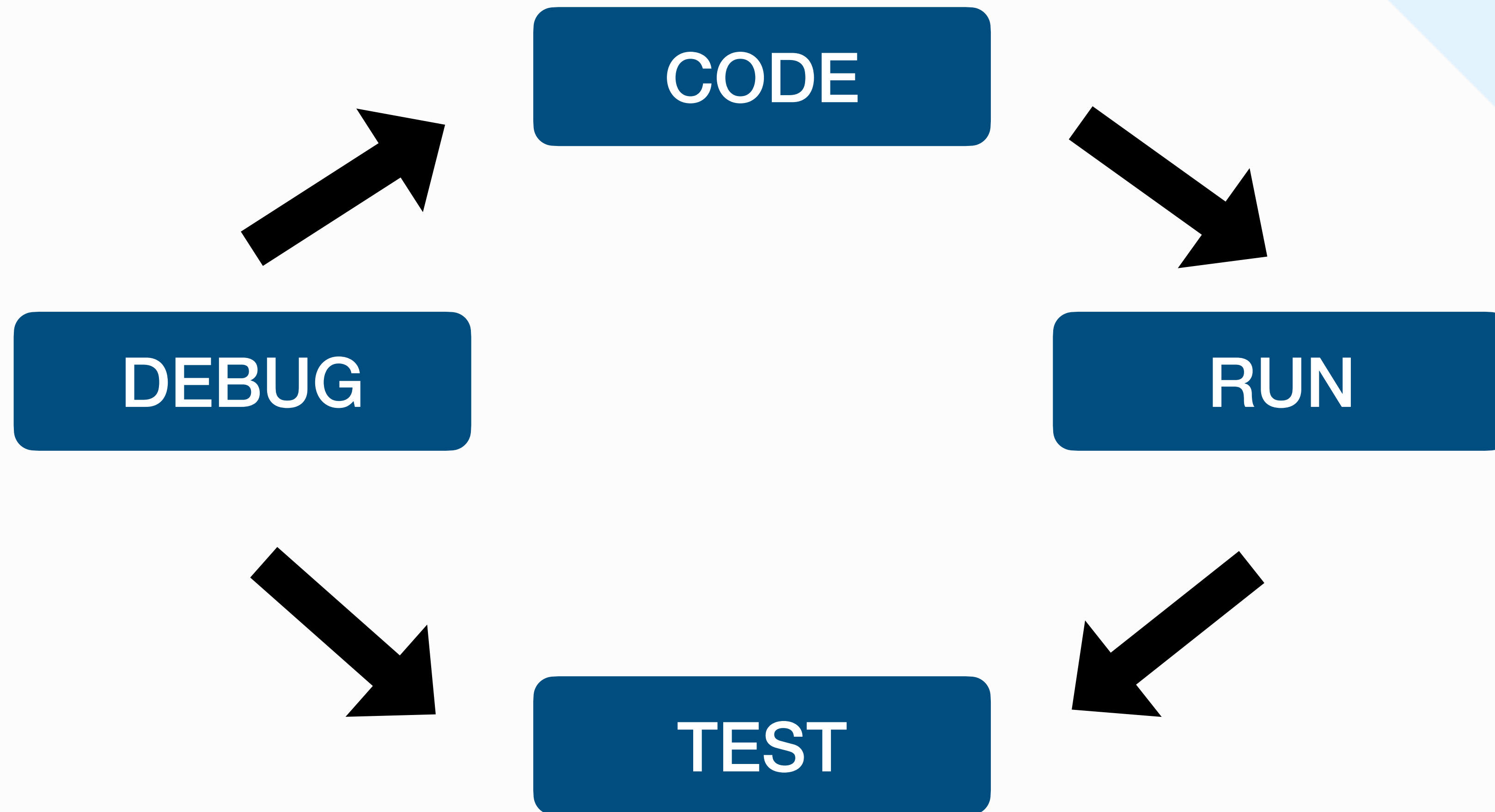
- **Software Architect** at Systematic, Denmark.
- Author of “**Cloud Native Spring in Action**” (Manning).
- **OSS contributor** (Java, Spring, Cloud Native Technologies)

thomasvitale.com

@vitaletomas



Inner Development Loop



Developer Experience

Developer Experience

“Top of mind for everyone”



Kubernetes ✓
@kubernetesio

Developer experience around Kubernetes is something that doesn't get enough focus. There's tools out there (checkout tilt tilt.dev and skaffold skaffold.dev), but we can't stop there. What tools you using to make the developer experience easier? ^BL

10:45 pm · 6 Jun 2019 · Twitter Web Client



DEV.BIZ.OPS

Jul 1 · 6 min read ★ · [Listen](#)



Developer Experience is Dead

There's more to developer flow than tools, docs & advocates



Daniel Bryant
@danielbryantuk



[#KubeCon](#) EU Takeaway 3: ➡ Developer experience is top of mind for everyone

Lots of organizations and engineers were talking about the importance of good developer experience/devex/DevX for their tooling and platforms

Read on for more details 🧵 👉

7:29 pm · 31 May 2022 · Typefully

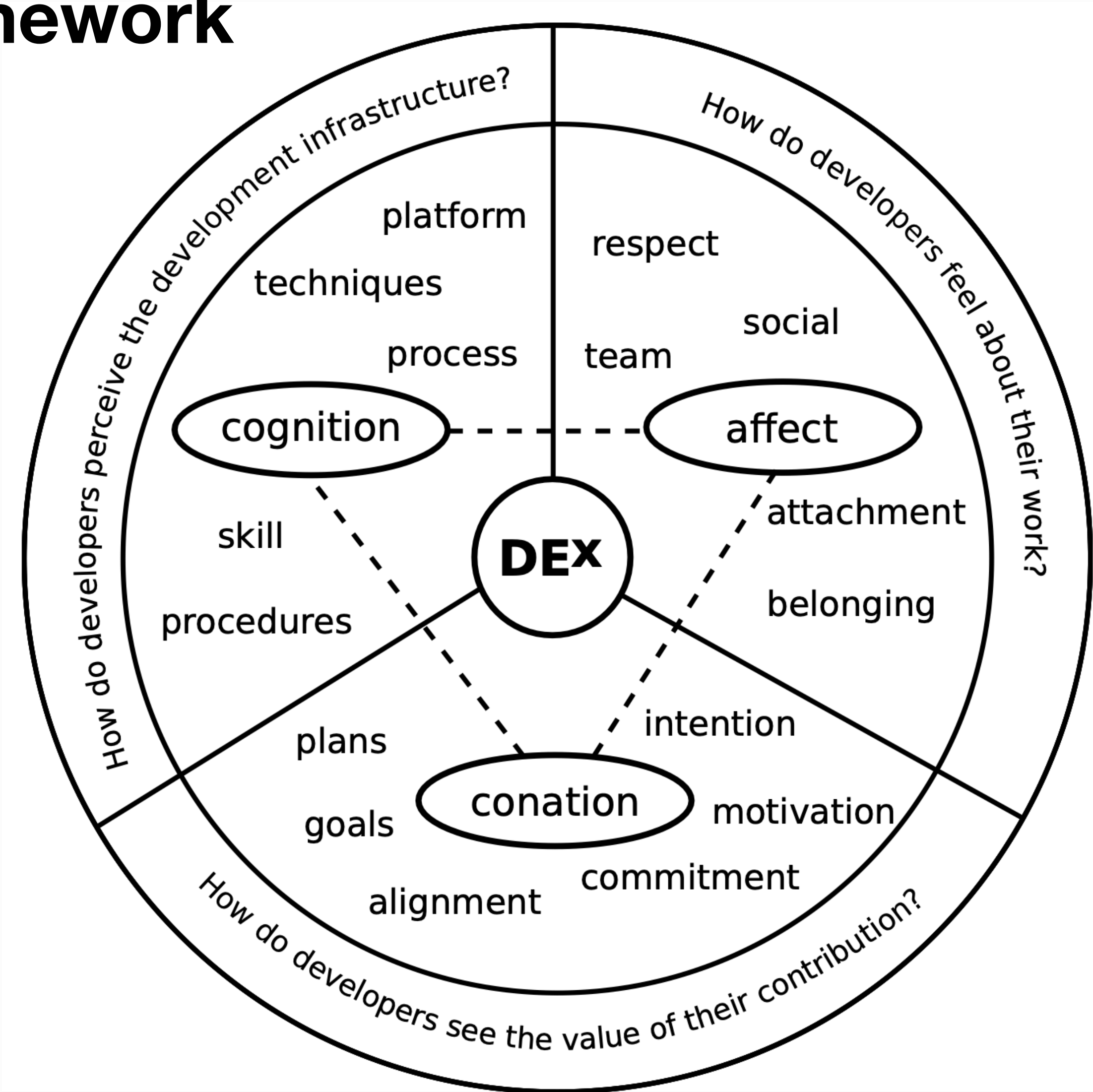
Developer Experience

“...developer experience could be defined as a means for capturing **how developers think and feel about their activities** within their working environments, with the assumption that an **improvement of the developer experience has positive impacts** on characteristics such as sustained team and project performance.”

(F. Fagerholm, J. Münch)

Developer Experience

Conceptual Framework



Developer Experience: Concept and Definition
(F. Fagerholm, J. Münch)

Value

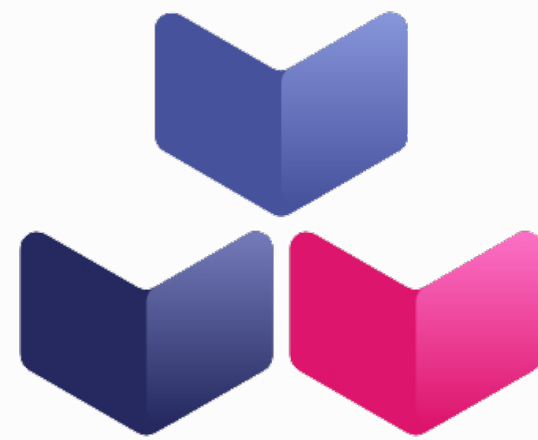
Developer Experience

Tools are not enough



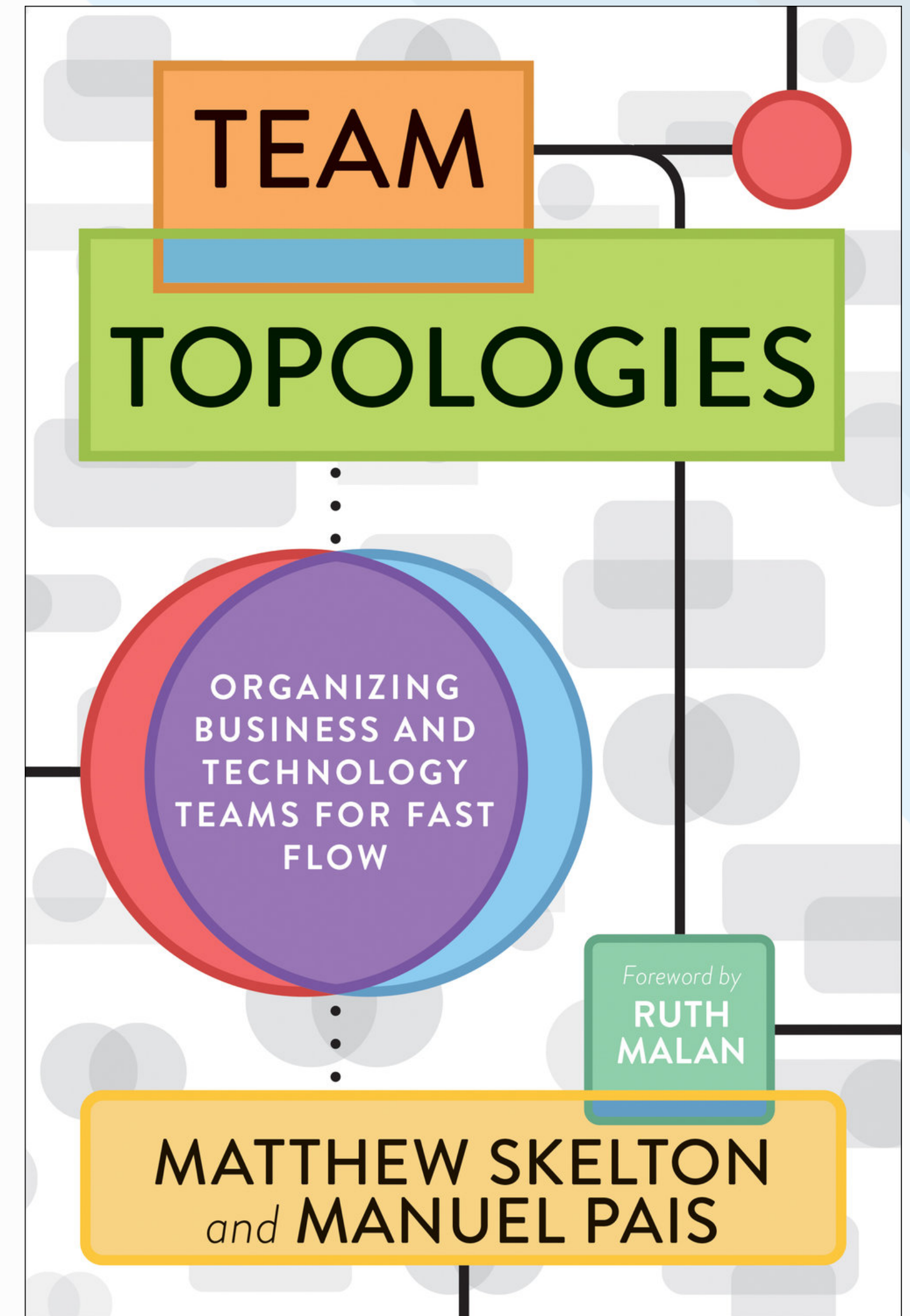
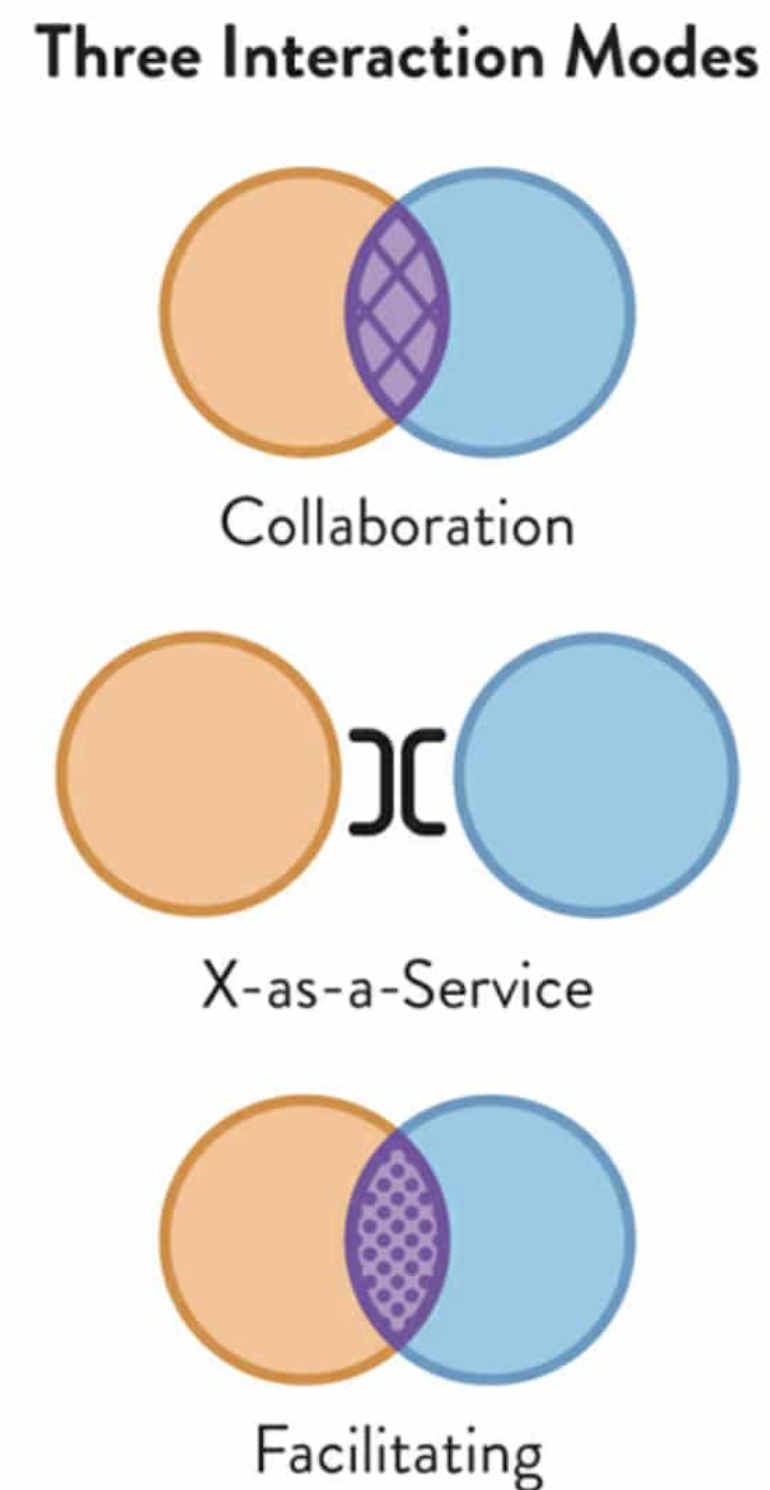
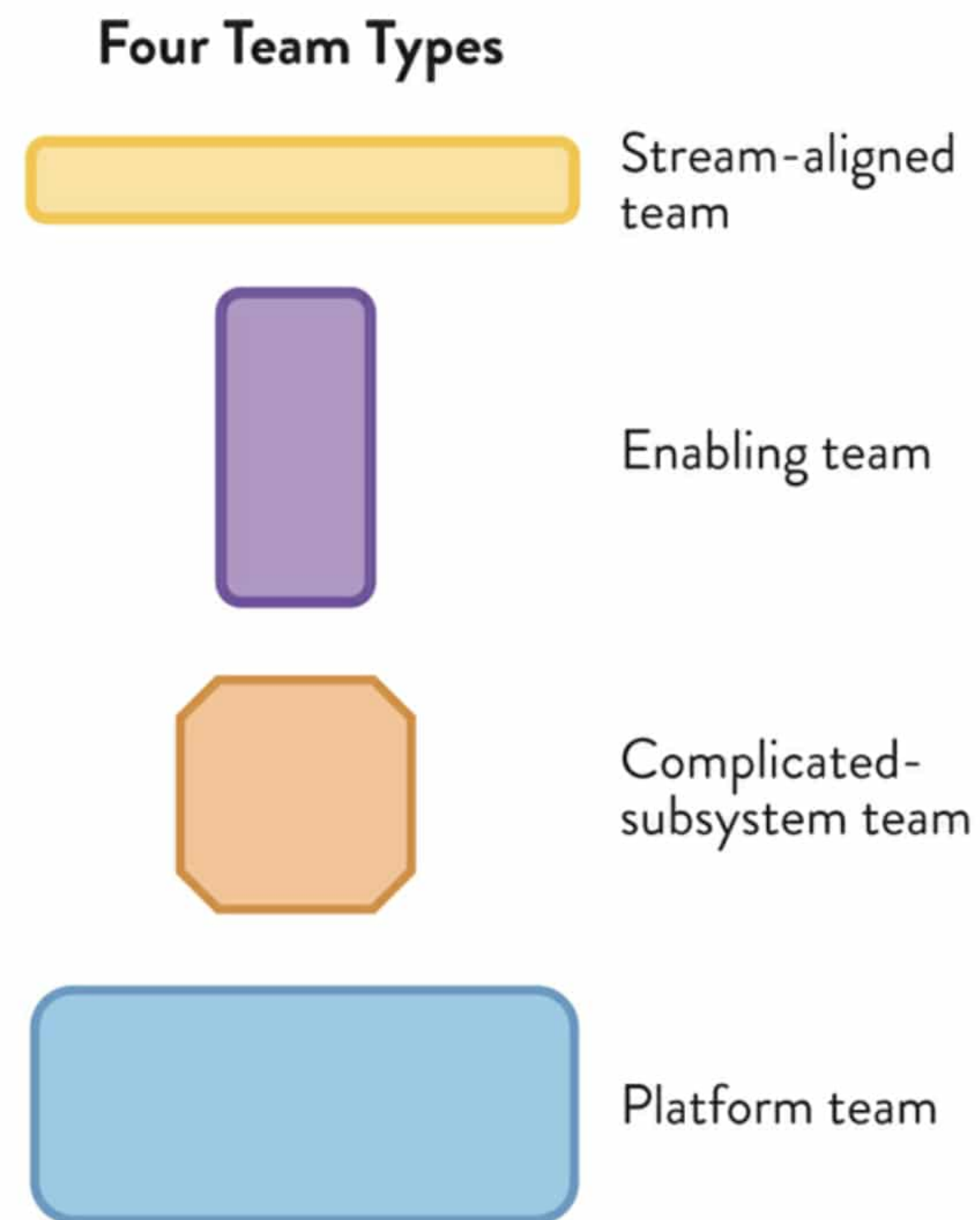
Technologies

Developer experience with Java on Kubernetes



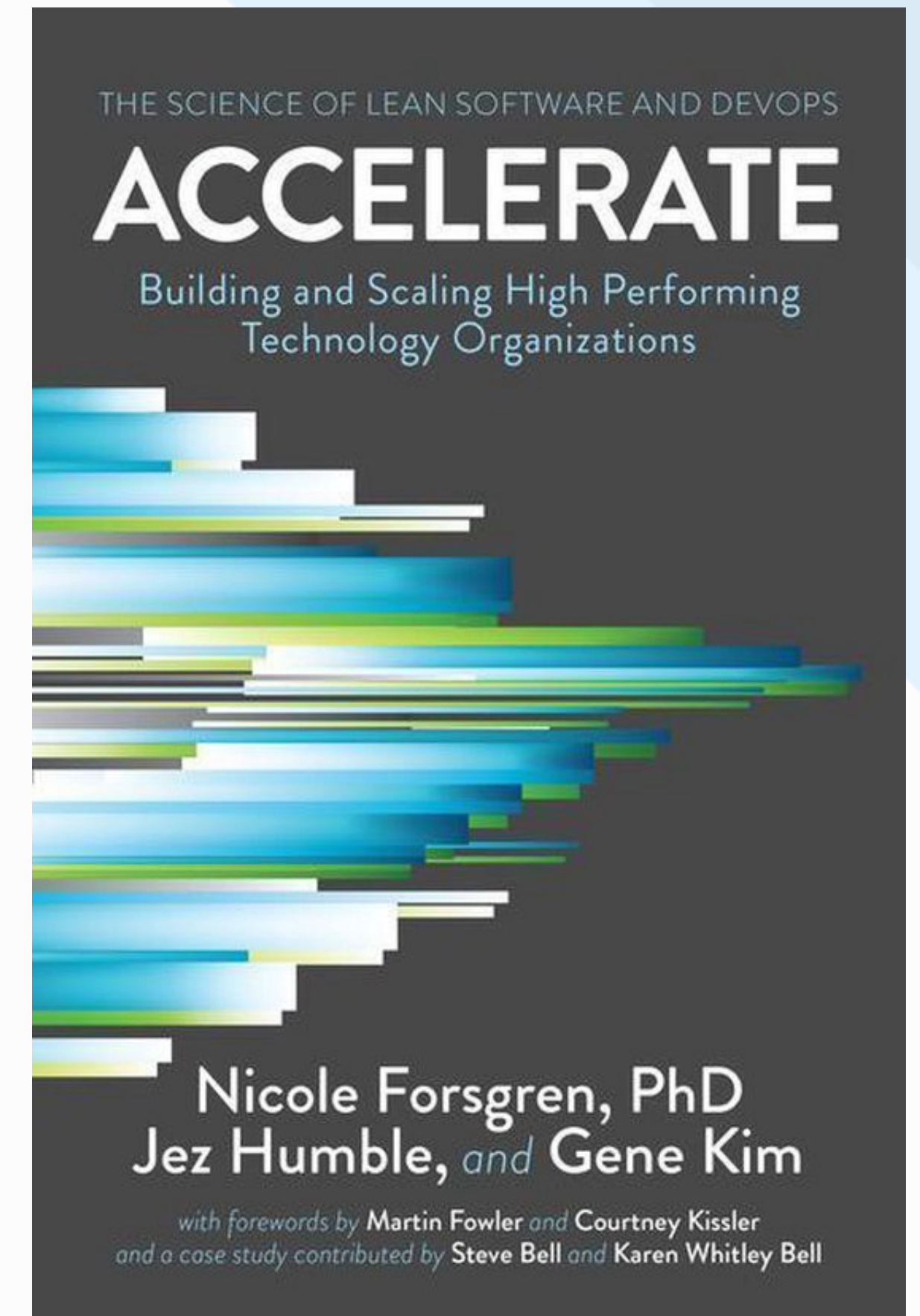
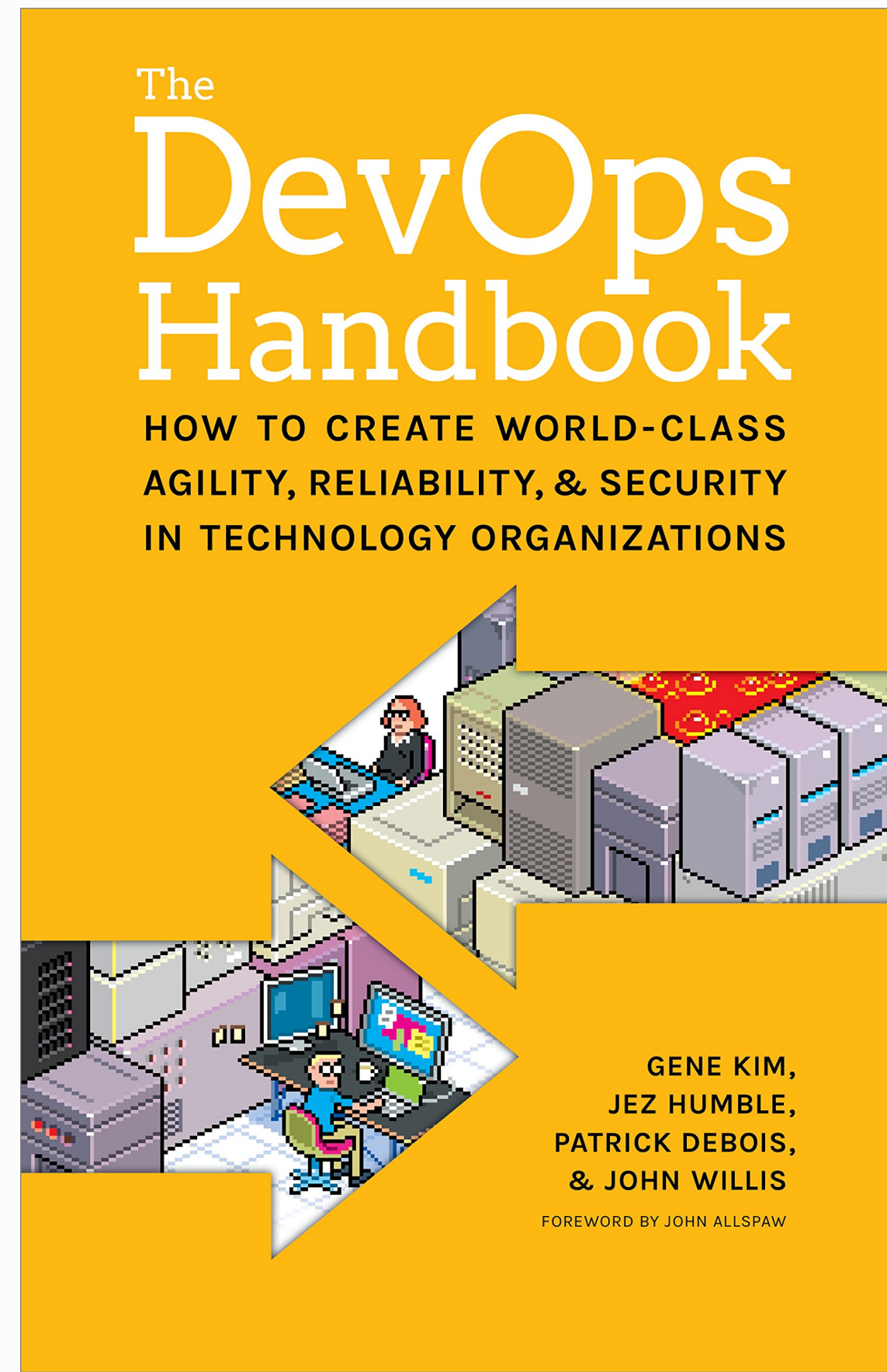
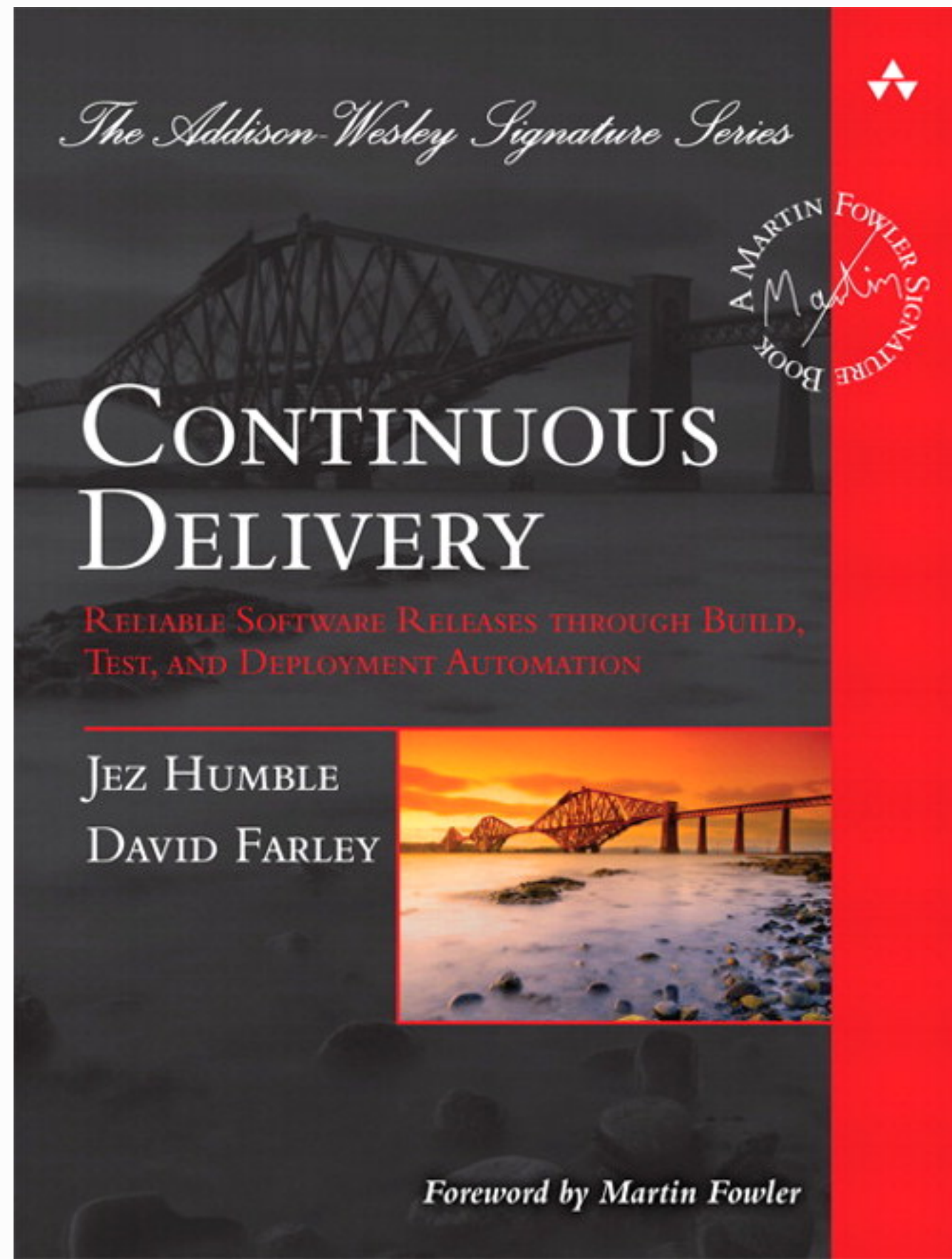
Team Topologies

Organisational design for software



Continuous Delivery

Better software faster



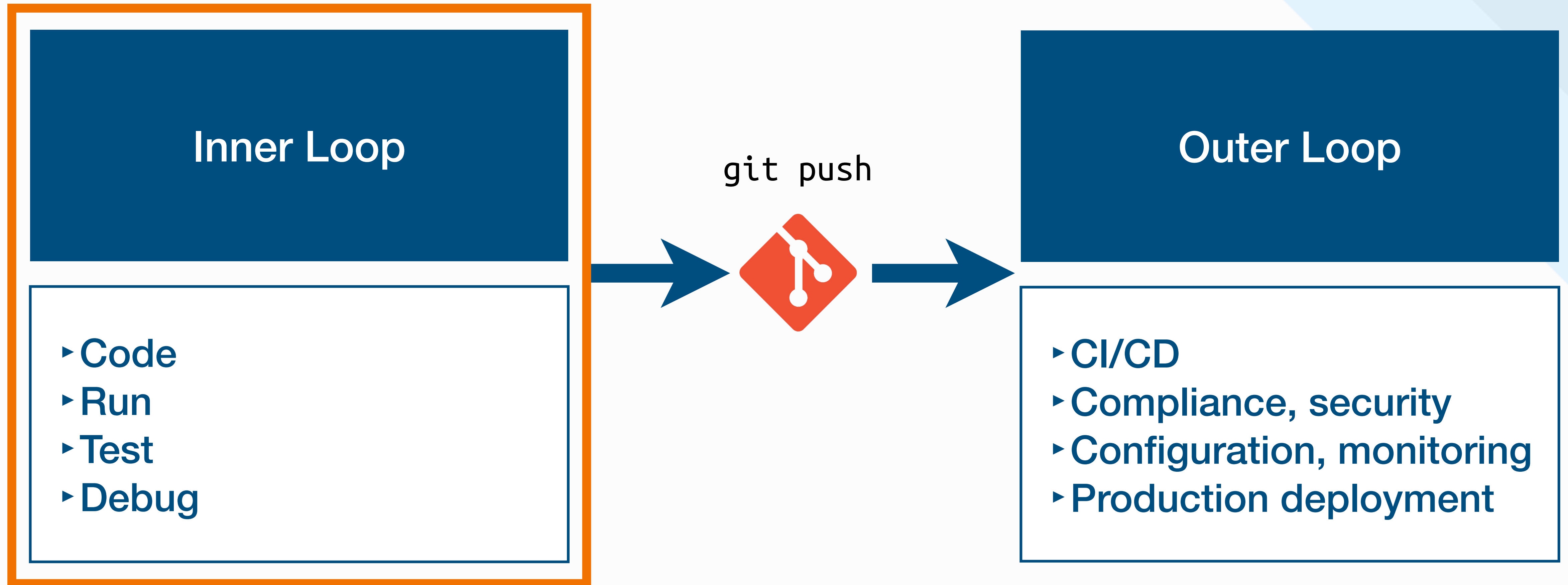
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Development Workflow

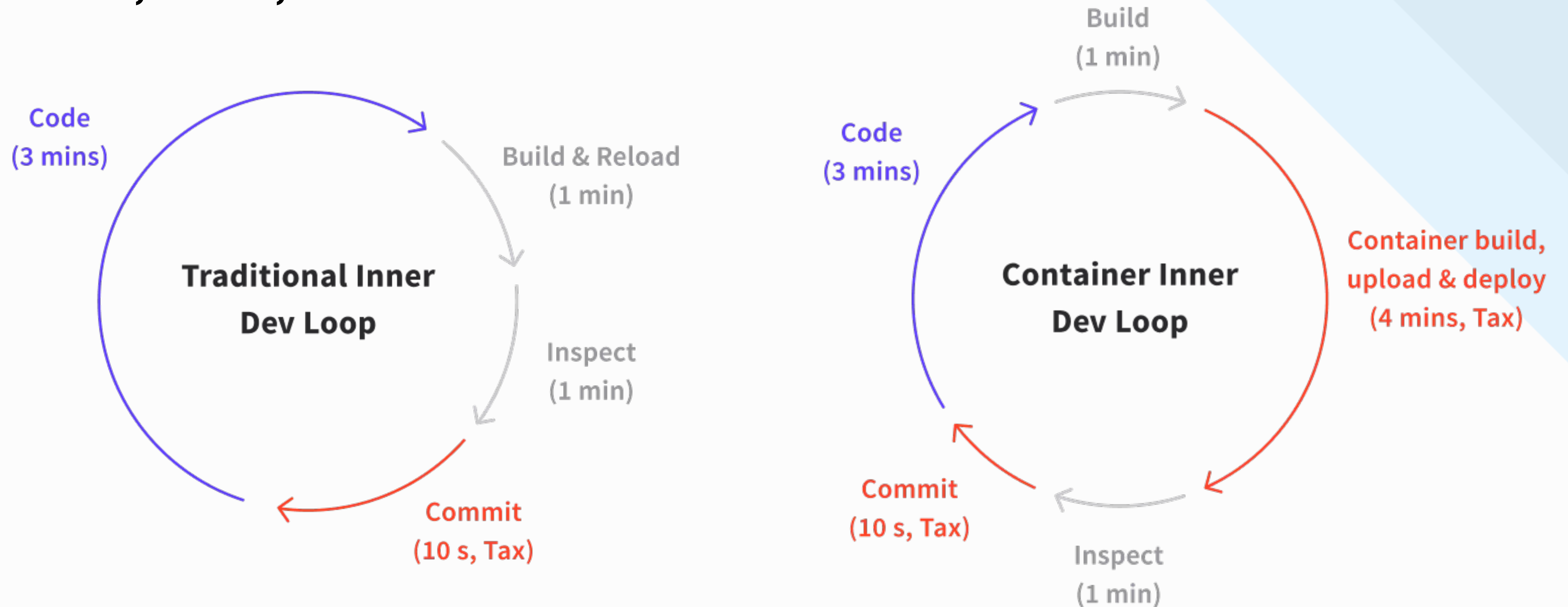
Development Workflow

Inner Loop and Outer Loop



Inner Development Loop

Code, build, test



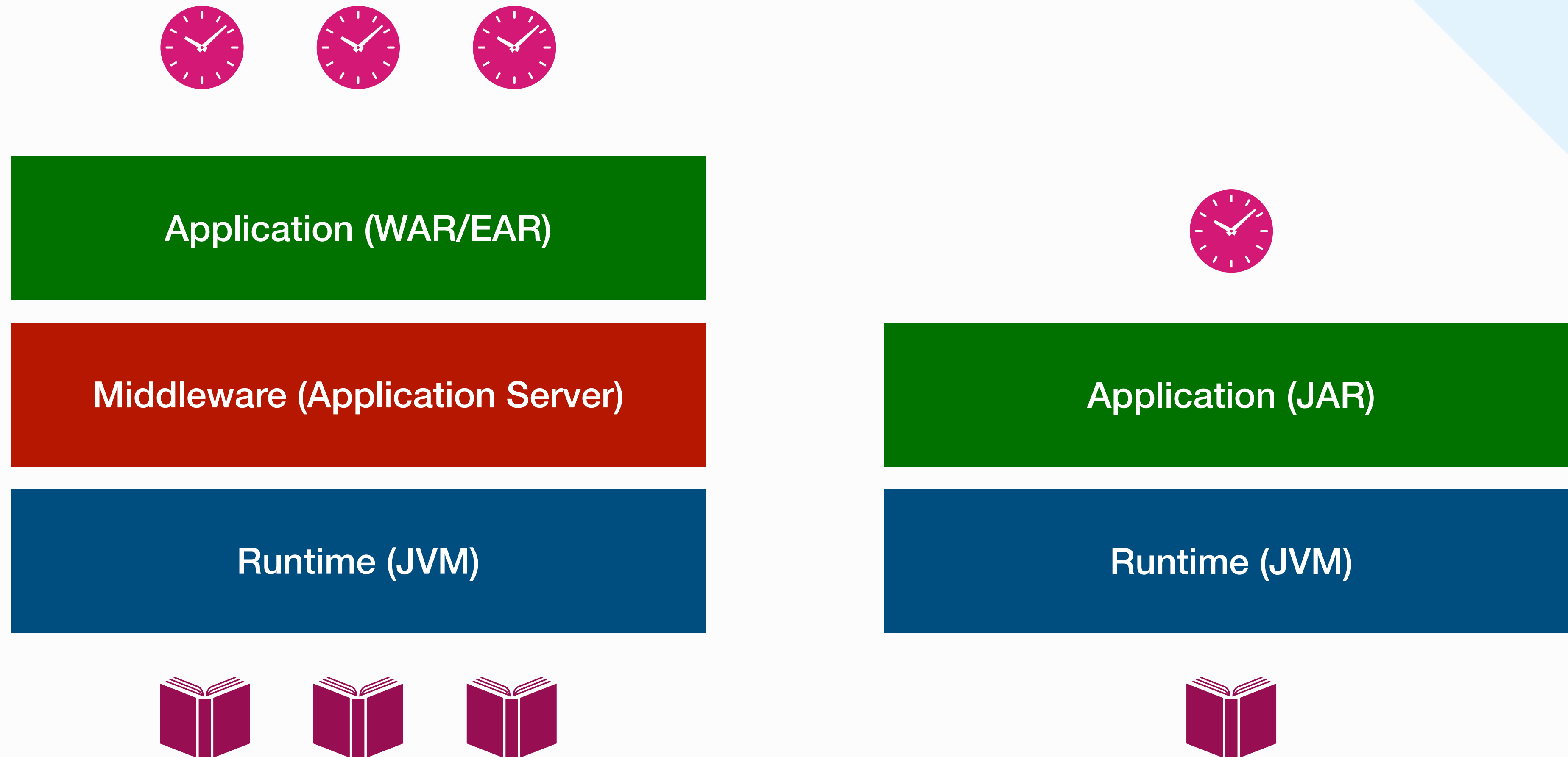
Goals

- 1 Rapid and continuous feedback loop
- 2 Reduced cognitive load
- 3 Clear path to production

Cloud Native

From Traditional to Cloud Native

Application Server, Embedded Server



Containers

Moving to Containers

Application Server, Embedded Server, Container



Application (WAR/EAR)

Middleware (Application Server)

Runtime (JVM)



#GOTOcph



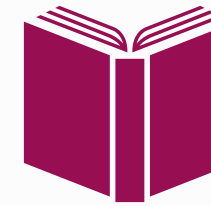
Application (JAR)

Runtime (JVM)



Application (Container)

Runtime (OCI)

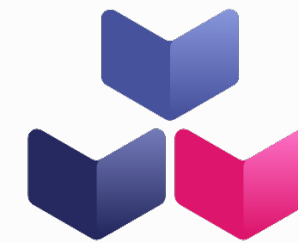
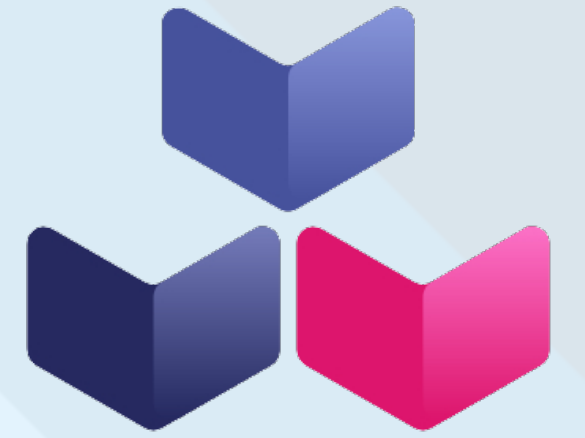


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Cloud Native Buildpacks

Cloud Native Buildpacks

From source code to container image





pack build

Image

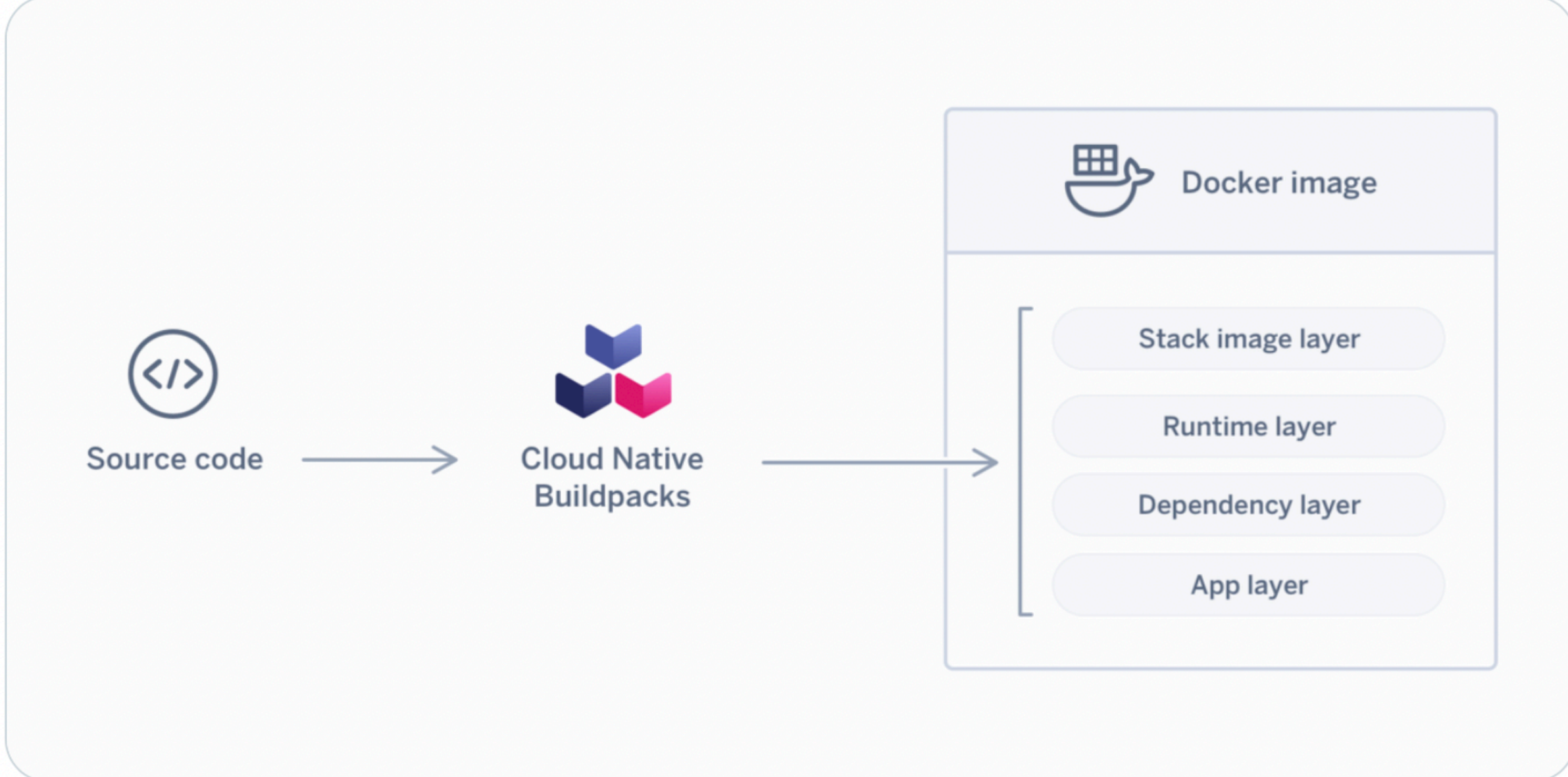
Cloud Native Buildpacks

From source code to container image



 **Heroku** 
@heroku

A New Cloud Native Standard for Buildpacks
bit.ly/2IBEe1w



```
graph LR; SC[Source code] --> CNB[Cloud Native Buildpacks]; CNB --> DI[Docker image]; subgraph DI [Docker image]; direction TB; S[Stack image layer]; R[Runtime layer]; D[Dependency layer]; A[App layer]; end
```

5:37 pm · 3 Oct 2018 · Salesforce - Social Studio

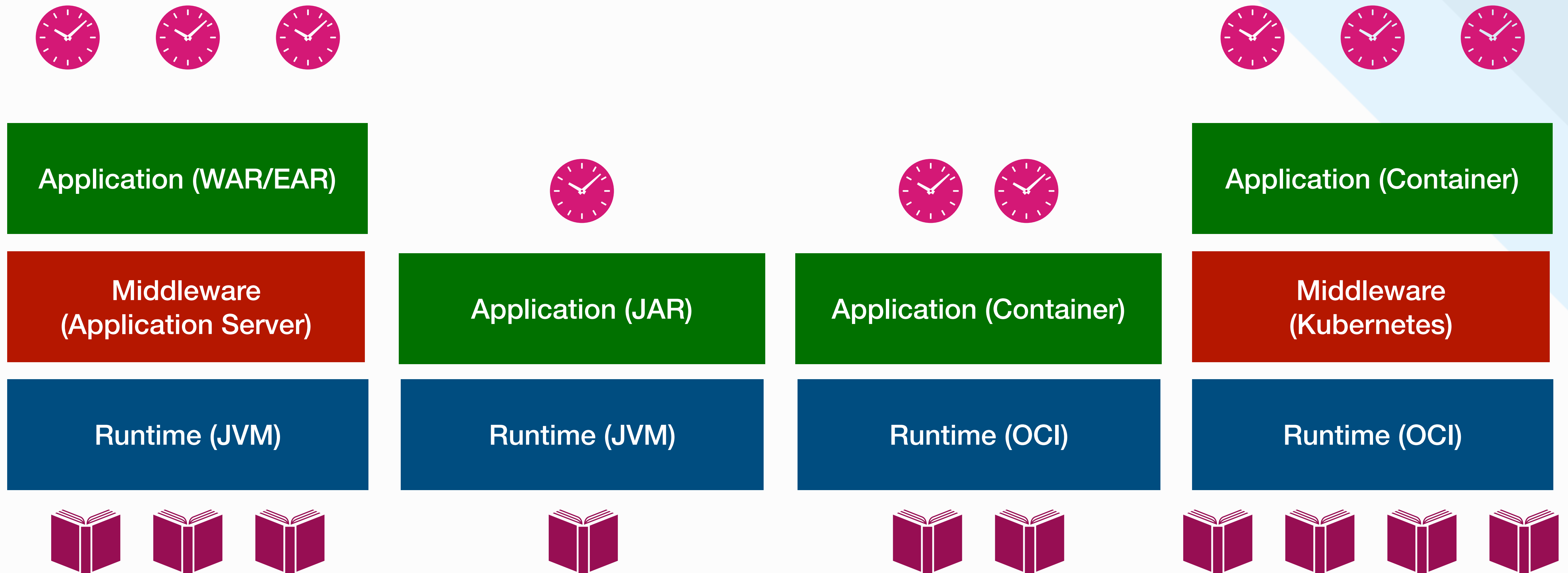
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Kubernetes

Moving to Kubernetes

Application Server, Embedded Server, Container, Kubernetes



Tilt

#GOTOcph

@vitaletomas

Tilt

Continuous development on Kubernetes

[Docs](#)[GitHub](#) ★ 5.8k[Blog](#)[About](#)

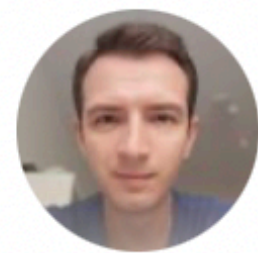
A toolkit for fixing the pains of microservice development.

Are your servers running locally? In Kubernetes? Both? Tilt gives you smart rebuilds and live updates everywhere so that you can make progress.



Tilt

Continuous development on Kubernetes



Piotr Mińkowski
@piotr_minkowski



Tip of the day 💡

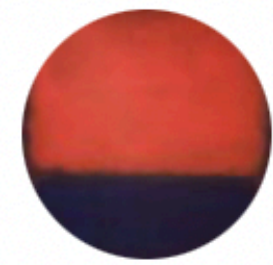
You can use Tilt ([@tilt_dev](#)) to easily build and run your application on [#Kubernetes](#).

👉 In comparison with similar tools, it provides UI for managing the process and cloud platform ([cloud.tilt.dev](#)) to share data with your team.

Skaffold

Skaffold

Continuous development on Kubernetes



Matt Rickard
@mattrickard



Kubernetes is ironically the fastest developer experience.

I use skaffold for all of my development. Having a fully hot reloaded dev environment is as easy as ``git clone && skaffold dev``.

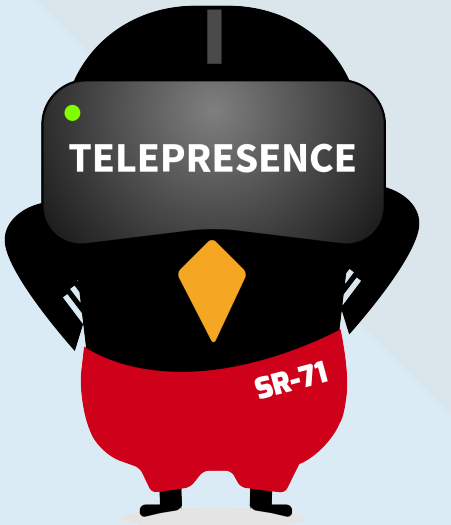
I can develop on a local cluster or switch to a remote cluster and use the same tools.

6:34 pm · 27 Jul 2021 · Twitter Web App

Telepresence

Telepresence

Local-to-remote bridges for fast iterations



Daniel Bryant
@danielbryantuk



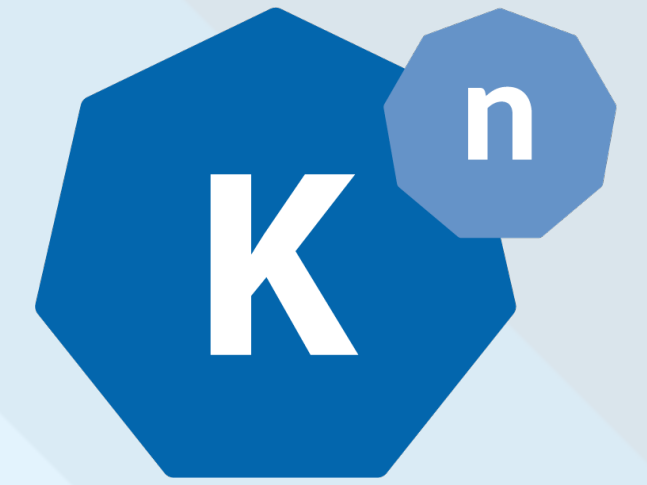
For local-to-remote bridges I'm obviously going to recommend Telepresence 😊

This tool seamlessly extends your laptop into a K8s cluster, enabling you to interact with remote services as if they were local. You can also share access to your local service

Knative

Knative

Serverless experience on Kubernetes



Kelsey Hightower ✓

@kelseyhightower



If Kubernetes is the electrical grid then knative is its light switch. knative.dev/docs

10:31 pm · 26 Aug 2021 · Twitter Web App

Serverless Architectures

Developers focus on code



Developer

Focus on business logic



Platform

Infrastructure
Provisioning

Workload
Management

Dynamic
Scaling

Knative Serving

Serverless Experience on Kubernetes



Developer-friendly
abstractions

From image to URL

Autoscaling
Scaling to zero

Progressive
Rollouts

Request-driven
Event-driven

Cloud agnostic

Argo CD

Argo CD

Continuous Deployment with GitOps



Mike Tougeron

@mtougeron



I learned about ArgoCD's ApplicationSet PR generator this week. I'm in automation heaven. Can't say what I'm doing with it is practical right now but it is extremely interesting and fun.

11:51 pm · 7 Jul 2022 · TweetDeck

Goals

- 1 Rapid and continuous feedback loop
- 2 Reduced cognitive load
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Configuration Management

Configuration Management

On Kubernetes





Build on Kubernetes with confidence

Carvel provides a set of reliable, single-purpose, composable tools that aid in your application building, configuration, and deployment to Kubernetes.



kapp-controller

A Package Manager that is compatible with Gitops ideas. Continuous delivery for Kubernetes Apps and Packages.



ytt

Template and overlay Kubernetes configuration via YAML structures, not text documents. No more counting spaces, or manual quoting.

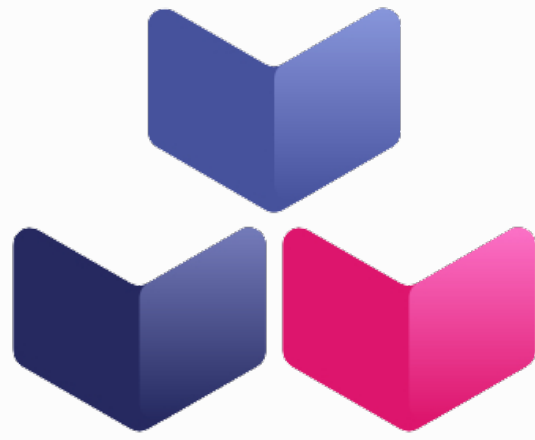


kapp

Install, upgrade, and delete multiple Kubernetes resources as one "application". Be confident your application is fully reconciled.

Capabilities over responsibilities

Developer



argo



Developer



?

Platform



Developer



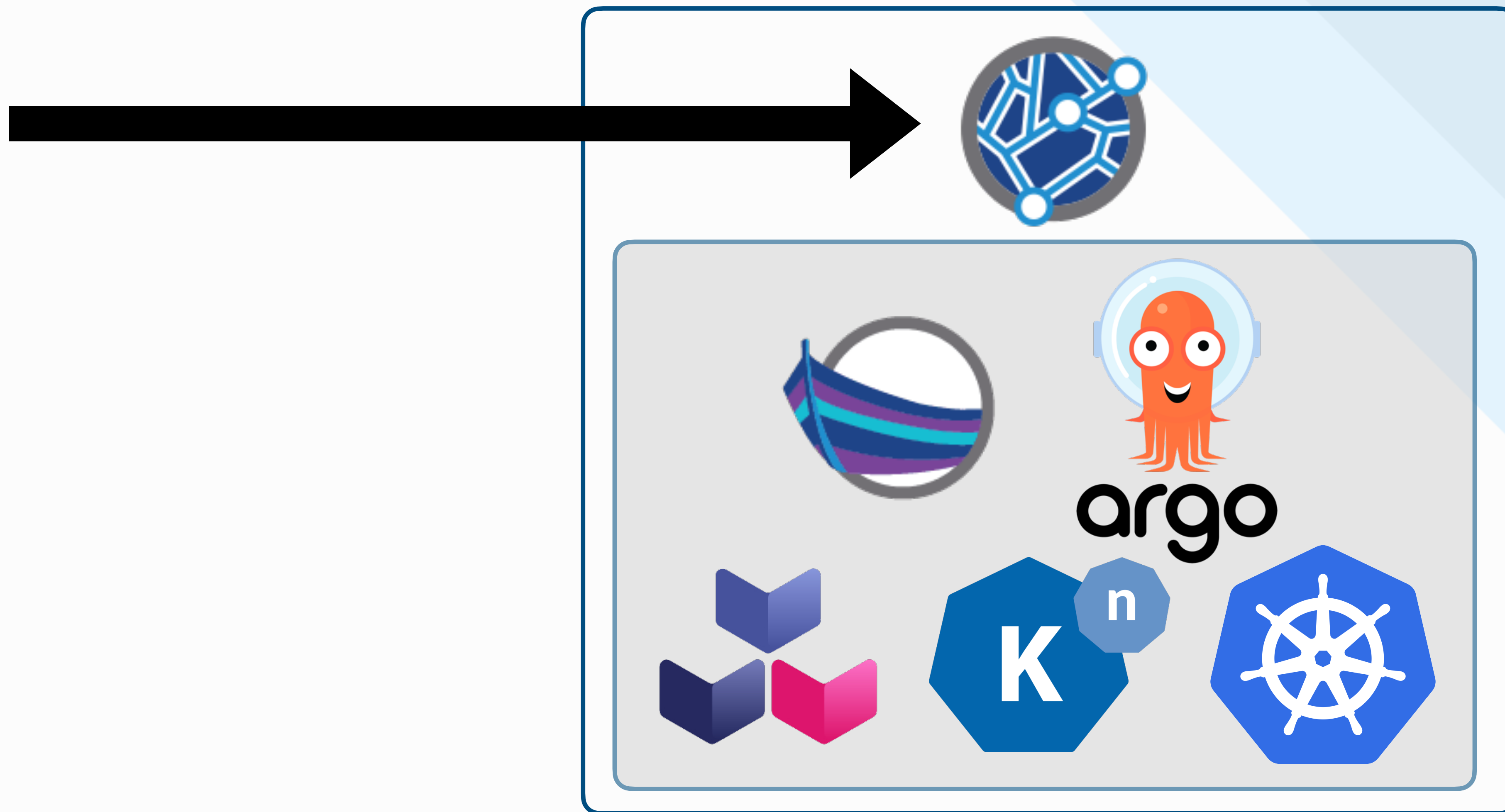
?

Platform



Developer

Platform



Cartographer

#GOTOcph

@vitaletomas

Cartographer

Golden paths to production



Joe Beda ✓
@jbeda



Cartographer is a super interesting project. It flips the script on supply chains by being unified glue between the tools you already use. It brings choreography to supply chains in a Kubernetes native way.



Cartographer @OssCartographer · 5 Oct 2021

📢 And we're alive!

Today Cartographer is released to the community with the idea of building:

- ✓ Reusable software supply chains
- ✓ Choreography pattern for K8s and non-K8s resources
- ✓ All your CI + CD app needs in one place

Learn more and build with us:

bit.ly/3DeFDWY

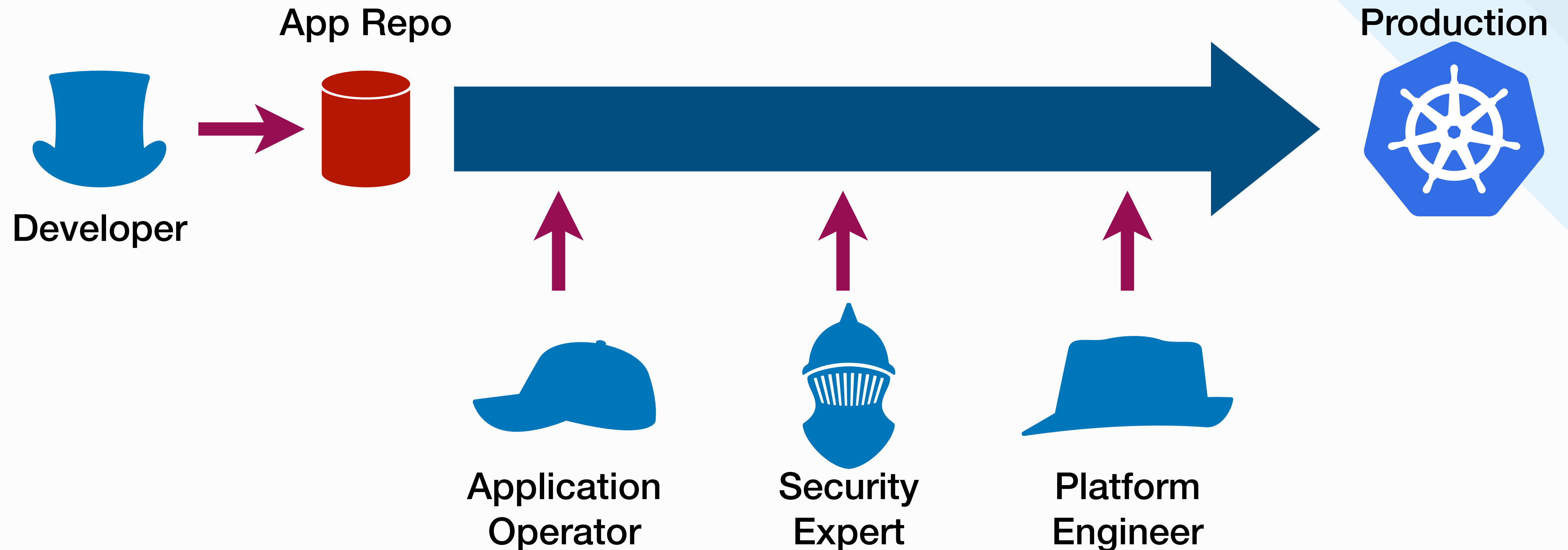
4:15 pm · 5 Oct 2021 · Twitter for iPhone

#GOTOcph

@vitaletthomas

Delivering Value

From code to production



Goals

- 1 Rapid and continuous feedback loop
- 2 Reduced cognitive load
- 3 Clear path to production

Resources

Resources

Source code

- Presentation source code
- Kadras: Application Platform Toolkit
- The developer experience and the inner dev loop
- Dockerfiles vs. Cloud Native Buildpacks
- Knative and Spring: Bringing back the func
- Developer Workflow
- Software Supply Chain Choreography

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Pull requests 1

Actions

Projects

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Security

Insights

main

1 branch

0 tags

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ThomasVitale Add new resources ef1eba1 on Feb 21 🕒 37 commits

| | | |
|-------------------|-----------------------------------|--------------|
| .github/workflows | Add linter | 2 years ago |
| .gitignore | Add first version of awesome list | 2 years ago |
| CONTRIBUTING.md | Add first version of awesome list | 2 years ago |
| LICENSE | Initial commit | 2 years ago |
| README.md | Add new resources | 3 months ago |

README.md

Awesome Spring

awesome Lint Code Base passing

A curated list of awesome books, tutorials, courses, and resources for the Spring framework ecosystem.

If you're new to Spring, start with watching the [What is Spring?](#) video.

Contents

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About

A curated list of awesome books, tutorials, courses, and resources for the Spring framework ecosystem.

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Readme

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514 stars

39 watching

89 forks

Releases

No releases published

Packages

No packages published

Contributors

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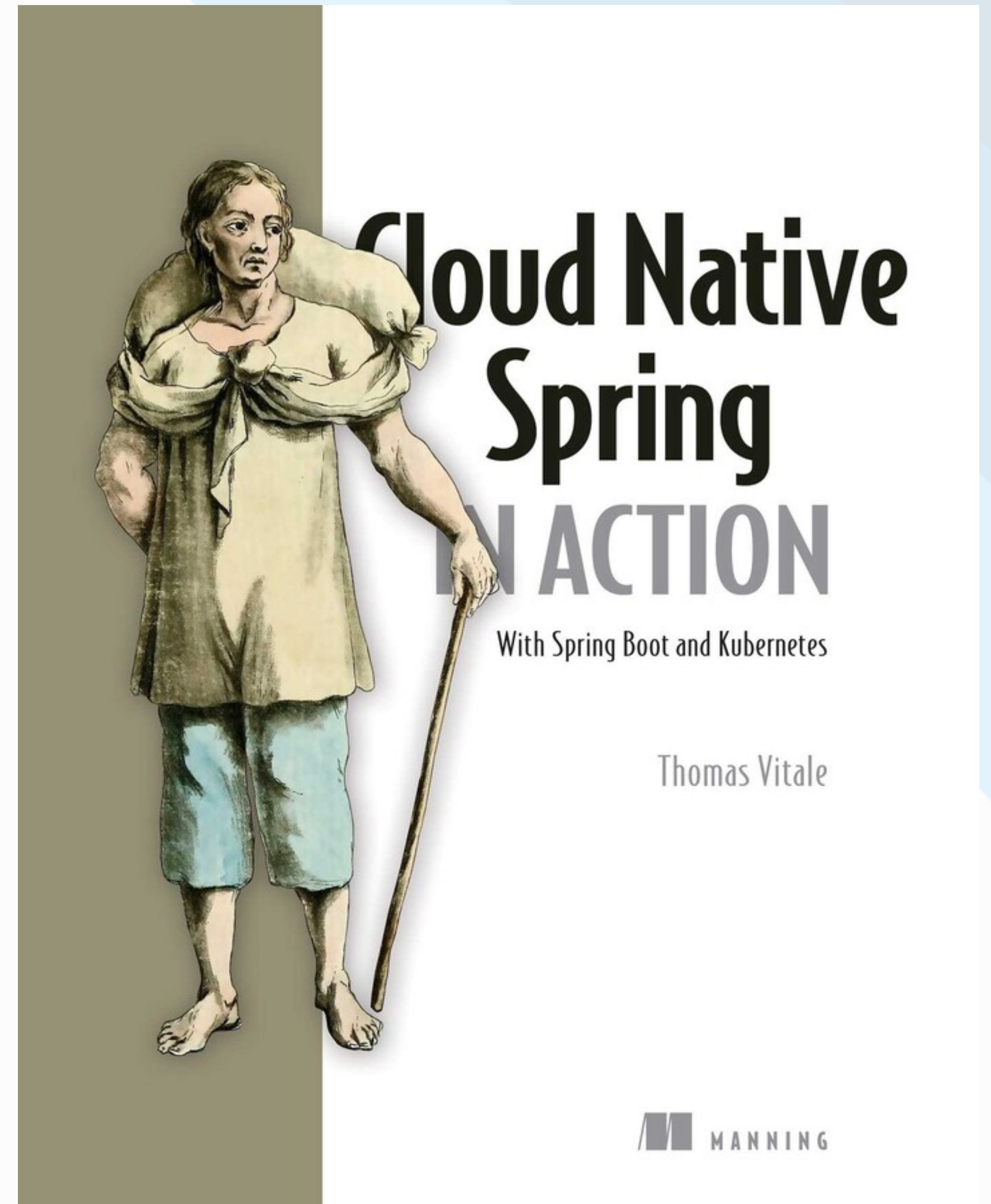
<https://github.com/ThomasVitale/awesome-spring>

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Manning

- **35% discount code**, valid for all products in all format
 - **ctwgotocph22**
- manning.com

thomasvitale.com



@vitaethomas

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With Java on Kubernetes

Thomas Vitale
GOTO Copenhagen
Oct 5th, 2022

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