Enter Serverless Functions Journey with Quarkus

Daniel Oh

- Developer Advocate at Red Hat
  - Cloud Native Runtimes
  - Serverless, Service Mesh, and GitOps Practices
- CNCF Ambassador
- Advisory Board Member of Global Skill Development Council
- Opensource.com Correspondents
- Public Speaker & Published Author

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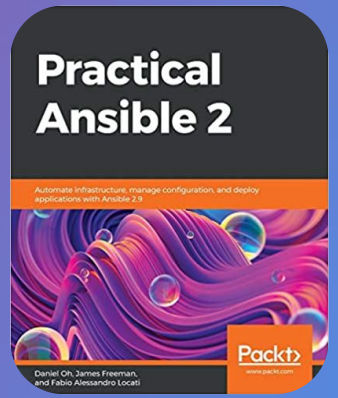

Eric Deandrea

@edeandrea

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- 22+ years software development experience
  - ~11 years as DevOps Architect in financial services / insurance
- Contributor to Open Source Projects
  - Quarkus
  - Spring Boot / Spring Framework / Spring Security
  - Spring Session / Spring Boot Admin Console
- Build & deliver cloud-native development training programs
- Published author
- Likes boating & holds black belt in martial arts

bit.ly/quarkus-serverless-labs

Sign-Up

- Developer Sandbox
- Amazon Web Services

Java Designed For a Different Time

Traditional

- ***Throughput*** *at the expense of* ***footprint***
- ***Long running*** *at expense of* ***startup speed***
- *Rich, dynamic behavior for mutable systems*

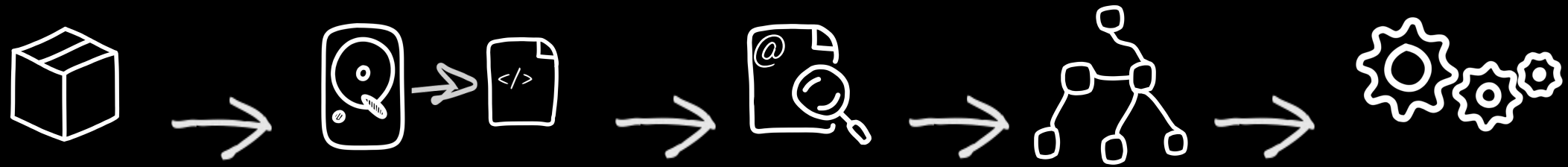
Cloud Native

- ***Throughput*** *solved by scaling*
- *Ephemeral, immutable systems*
- *Footprint and performance matter*

How Does a Framework Start?

Build Time

Runtime



Packaging (maven, etc)

Load config file from file system Parse it

Classpath scanning to find annotated classes Attempt to load class to enable/disable features

Build its model of the world.

Start the management (thread, pool...)

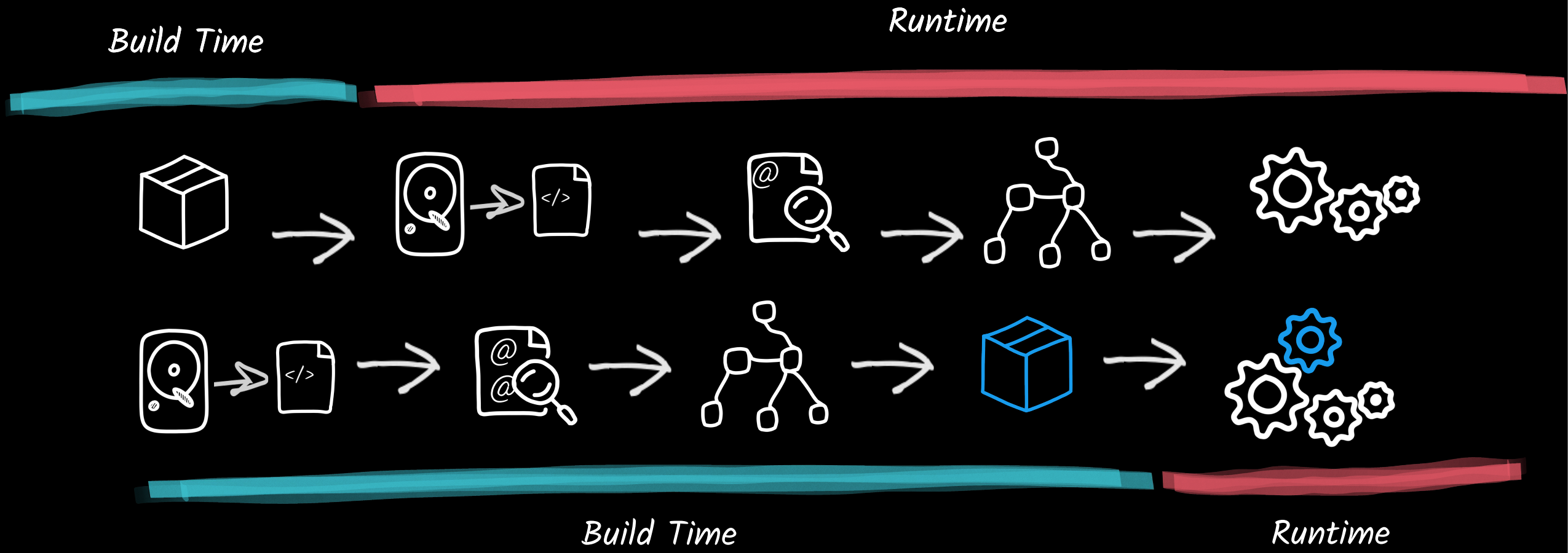
QUARKUS

Supersonic, Subatomic Java

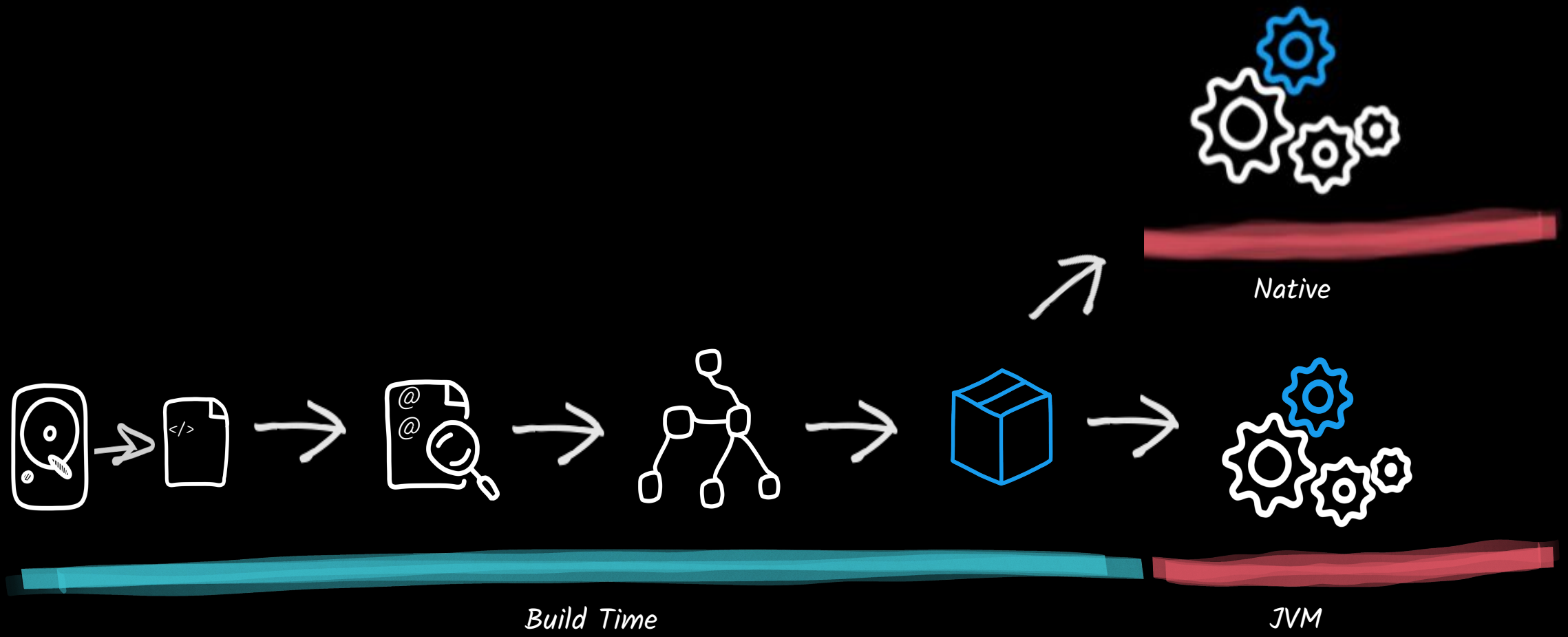
Supersonic, Subatomic

- Move as much as possible to build phase
- Minimize runtime dependencies
- Maximize dead code elimination
- Introduce clear metadata contracts
- Enhance developer joy

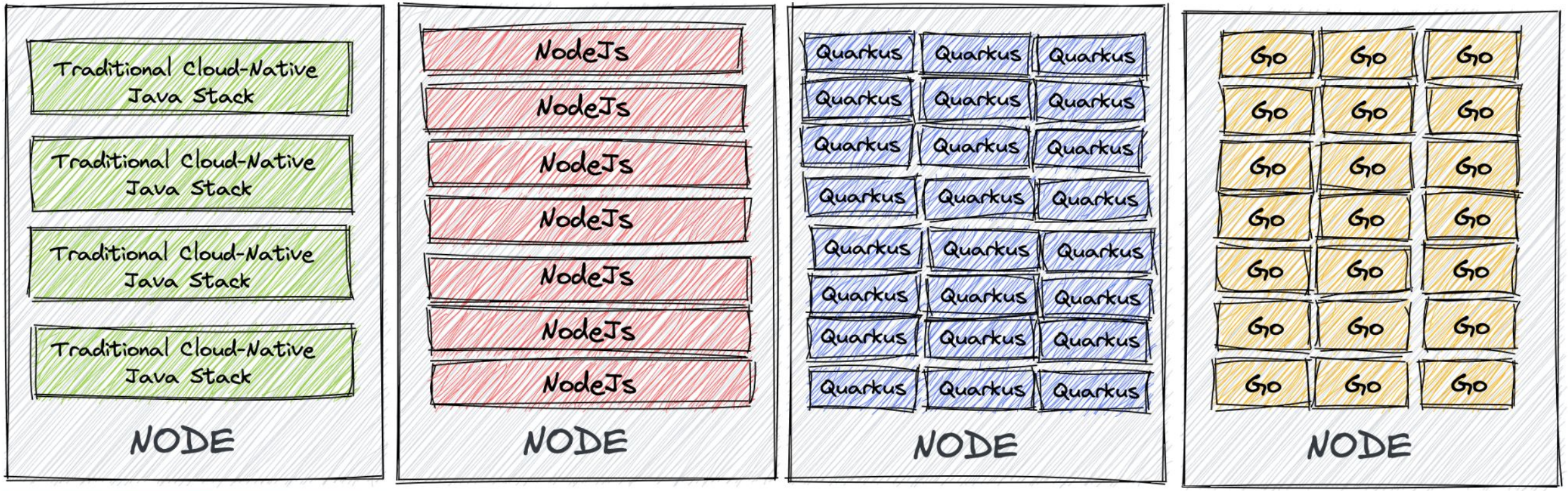
The Quarkus Way



The Quarkus Way enables Native Compilation

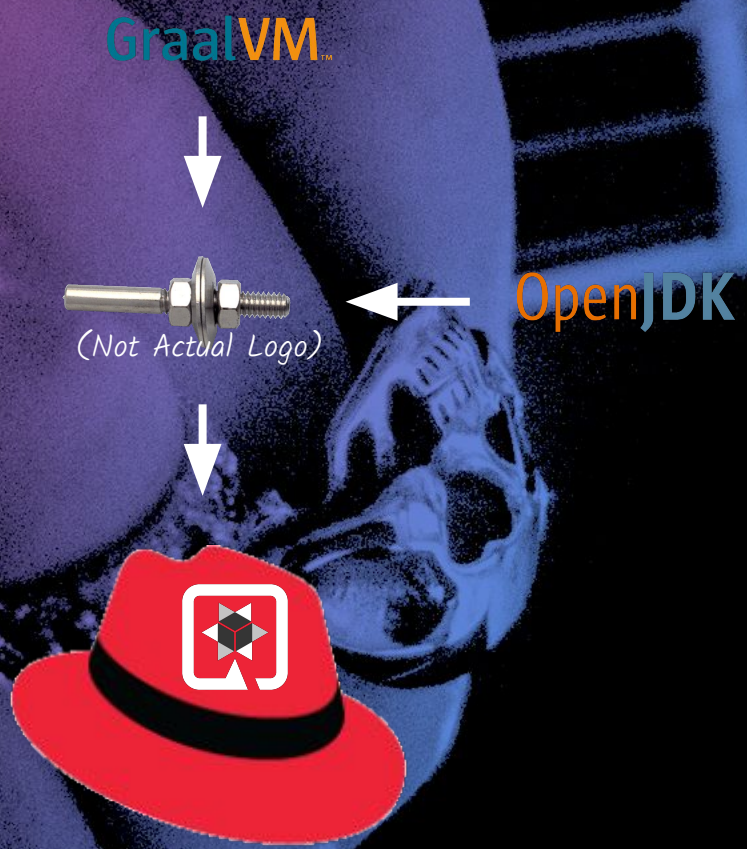


Quarkus Container First



Mandrel For Native

- Mandrel is a downstream distribution of GraalVM and part of the GraalVM community
  - https://github.com/graalvm/mandrel
- Combines best of GraalVM + OpenJDK 11/17 to offer native builds
- Makes GraalVM easier to consume from a Open Source licensing and maintenance perspective by consuming patches and CVE's from OpenJDK
- Aims to be a near drop in replacement for GraalVM
- Only focused on native compilation (e.g. we will not support polyglot apps - Java only)
- No change for user experience with Quarkus



Quarkus Funqy

- A portable Java API to write functions
- Deployable to various FaaS environments or a standalone service

```java
import io.quarkus.funqy.Funq;

public class GreetingFunction {
    @Funq
    public String greet(String name) {
        return "Hello " + name;
    }
}
```

Quarkus Funqy

- Async Reactive Types
- Supports the Smallrye Mutiny Uni reactive type as a return type

```
import io.quarkus.funqy.Funq;
import io.smallrye.mutiny.Uni;

public class GreetingFunction {

    @Funq
    public Uni<Greeting> reactiveGreeting(String name) {
        ...
    }
}
```

Quarkus Funq

🤘 *Supports dependency injection through CDI or Spring DI*

```java
@ApplicationScoped
public class GreetingFunction {

    @Inject
    GreetingService service;

    @Funq
    public Greeting greet(Friend friend) {
        Greeting greeting = new Greeting();
        greeting.setMessage(service.greet(friend.getName()));
        return greeting;
    }
}
```

Quarkus Funqy

Cloud

Quarkus Funqy

This guide explains basics of the Funqy framework, a simple portable cross-provider cloud function API.

Quarkus Funqy HTTP

This guide explains Funqy's HTTP binding.

Quarkus Funqy Amazon Lambdas

This guide explains Funqy's Amazon Lambda binding.

Quarkus Funqy Amazon Lambdas HTTP

This guide explains Funqy's Amazon Lambda HTTP binding.

Quarkus Funqy Knative Events

This guide explains Funqy's Knative Events binding.

Quarkus Funqy Azure Functions HTTP

This guide explains Funqy's Azure Functions HTTP binding.

Quarkus Funqy Google Cloud Platform

This guide explains Funqy's Google Cloud Platform Functions binding.

Quarkus Funqy Google Cloud Platform HTTP

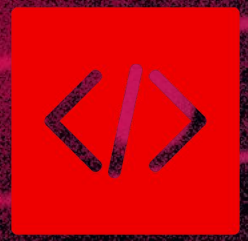
This guide explains Funqy's Google Cloud Platform Functions HTTP binding.

Quarkus for Knative

- Enable the generation of Knative resources in your Properties:
  - quarkus.kubernetes.deployment-target=knative
- Generated knative.json and knative.yml automatically

```
{
  {
    "apiVersion" : "serving.quarkus.knative.dev/v1alpha1",
    "kind" : "Service",
    "metadata" : {
      "annotations": {
       "app.quarkus.io/vcs-url" : "<some url>",
       "app.quarkus.io/commit-id" : "<some git SHA>"
      },
      "labels" : {
        "app.kubernetes.io/name" : "test-quarkus-app",
        "app.kubernetes.io/version" : "1.0-SNAPSHOT"
      },
      "name" : "knative.
    },
    "spec" : {
      "runLatest" : {
        "configuration" : {
          "revisionTemplate" : {
            "spec" : {
              "container" : {
                "image" : "dev.local/yourDockerUsername/test-quarkus-app:1.0-SNAPSHOT",
                "imagePullPolicy" : "Always"
              }
            }
          }
        }
      }
    }
  }
}
```

Simple Path from Quarkus to Multi Serverless Platforms



Write code

Package

OPENSHIFT

Hands-on!

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Sign-Up

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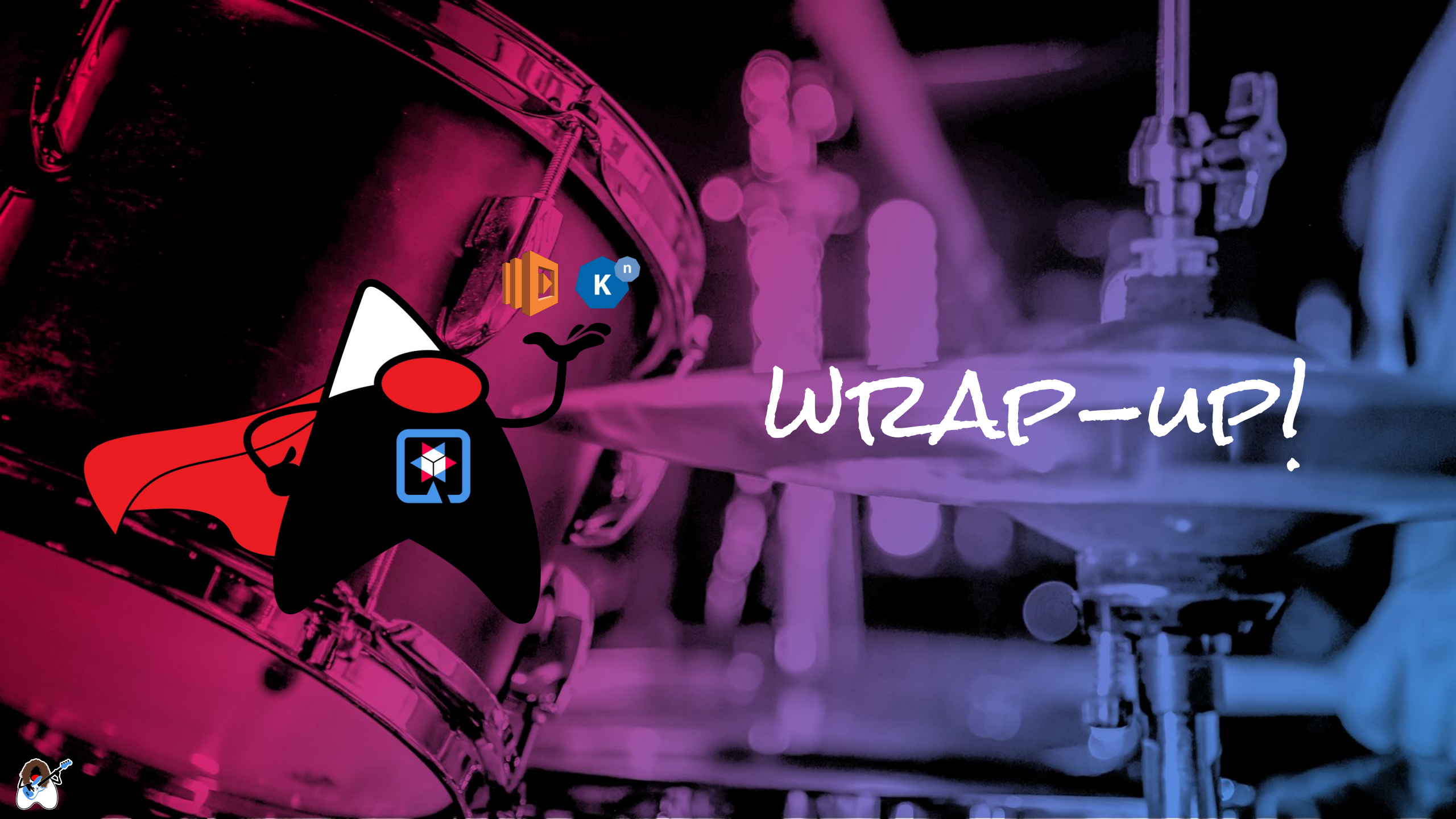
WRAP-UP!

Last But Not Least

- Accelerate Cloud-Native Application Design Using API Contracts [Workshop]
  - Wednesday at 1:00 pm, Shawnee/Cherokee - Deven Phillips, Daniel Vaseekaran
- Integration Testing with Quarkus
  - Thursday at 12:45 pm, Belmont - Daniel Oh
- How about some tests with your applications?
  - Friday at 10:15 am, Belmont - Eric Deandrea
- The Things Cloud Vendors Won't Tell You
  - Friday at 11:30 am, Keeneland - Deven Phillips

red.ht/quarkus-func

- *Faster Serverless Functions With GraalVM*
- *Make Portable Functions Across Serverless Platforms*
- *Bind CloudEvents With Quarkus*

red.ht/quarkus-spring-devs

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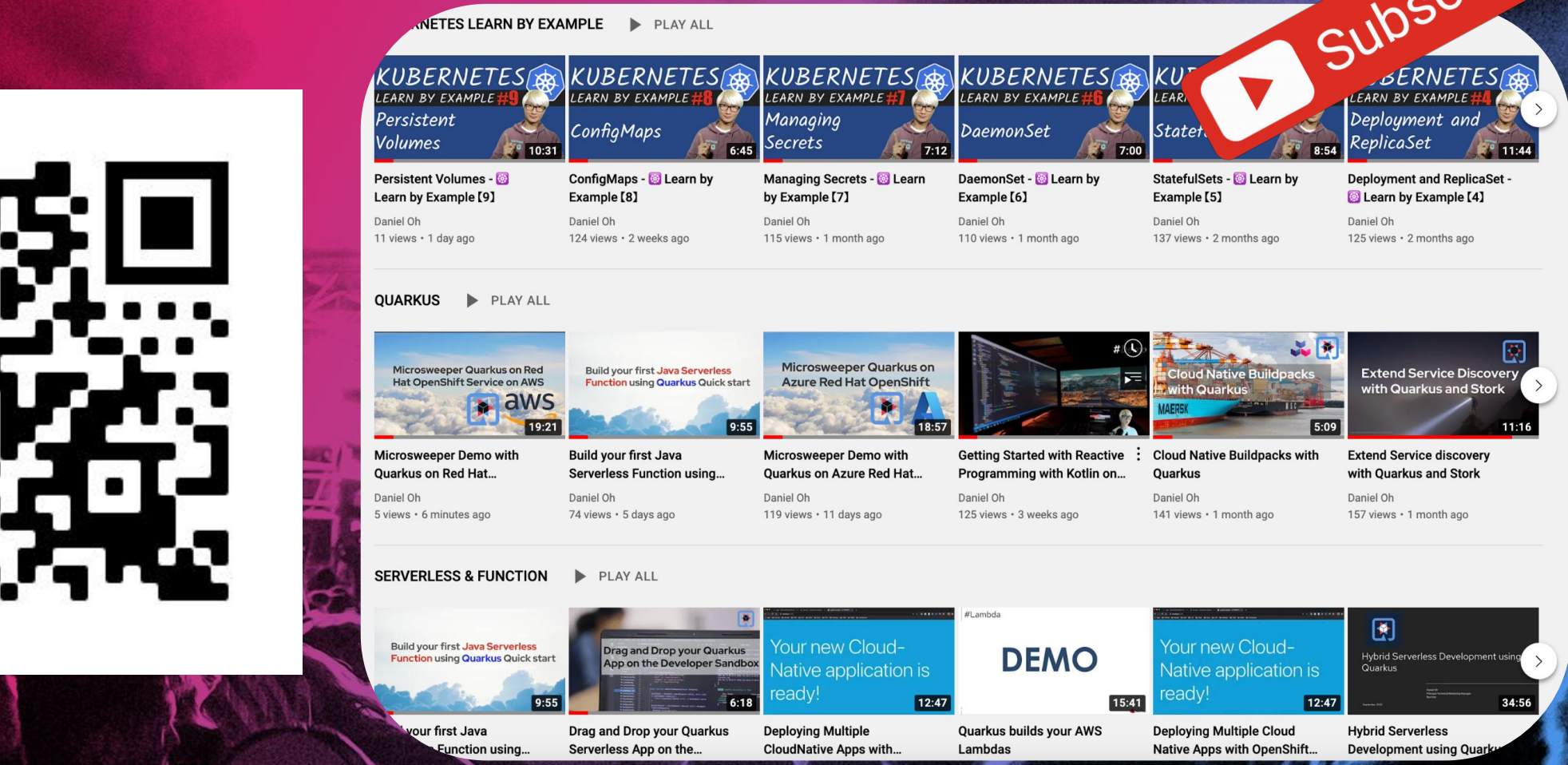

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