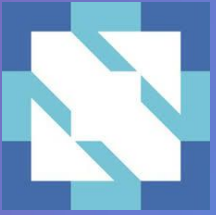




Enter Serverless Functions Journey with Quarkus

Daniel Oh

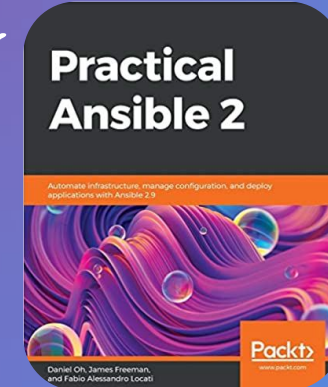


- *Developer Advocate at Red Hat*
 - *Cloud Native Runtimes*
 - *Serverless, Service Mesh, and GitOps Practices*
- *CNCF Ambassador*
- *Advisory Board Member of Global Skill Development Council*
- *Opensource.com Correspondents*
- *Public Speaker & Published Author*

 [@danieloh30](https://twitter.com/danieloh30)

 bit.ly/danielohtv

 [danieloh30](https://github.com/danieloh30)



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



QUARKUS

SUPERSONIC, SUBATOMIC JAVA

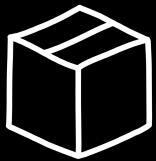
SUPERSONIC, SUBATOMIC

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

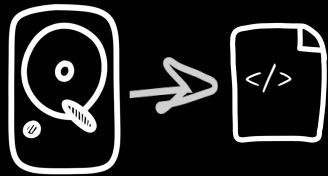
HOW DOES A FRAMEWORK START?

Build Time

Runtime



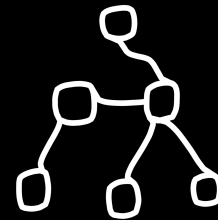
Packaging
(maven,
etc)



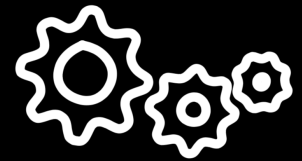
Load config file
from file system
Parse it



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



Build its
model of
the world.

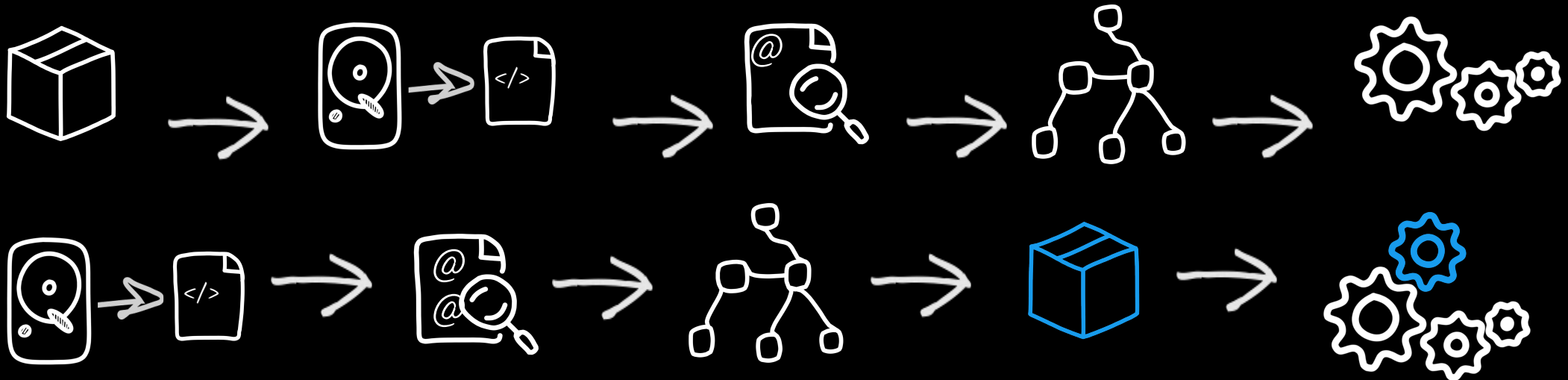


Start the
management
(thread,
pool...)

THE QUARKUS WAY

Build Time

Runtime



Build Time

Runtime

QUATZKUS NATIVE COMPILATION

Compile

Provision
(curate)

Wiring &
Assemble
(augment)

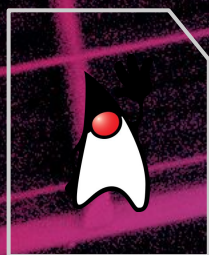
JDK Hotspot Runnable & Image

AOT Native
Compilation

Native Executable
& Image



app.jar



Frameworks

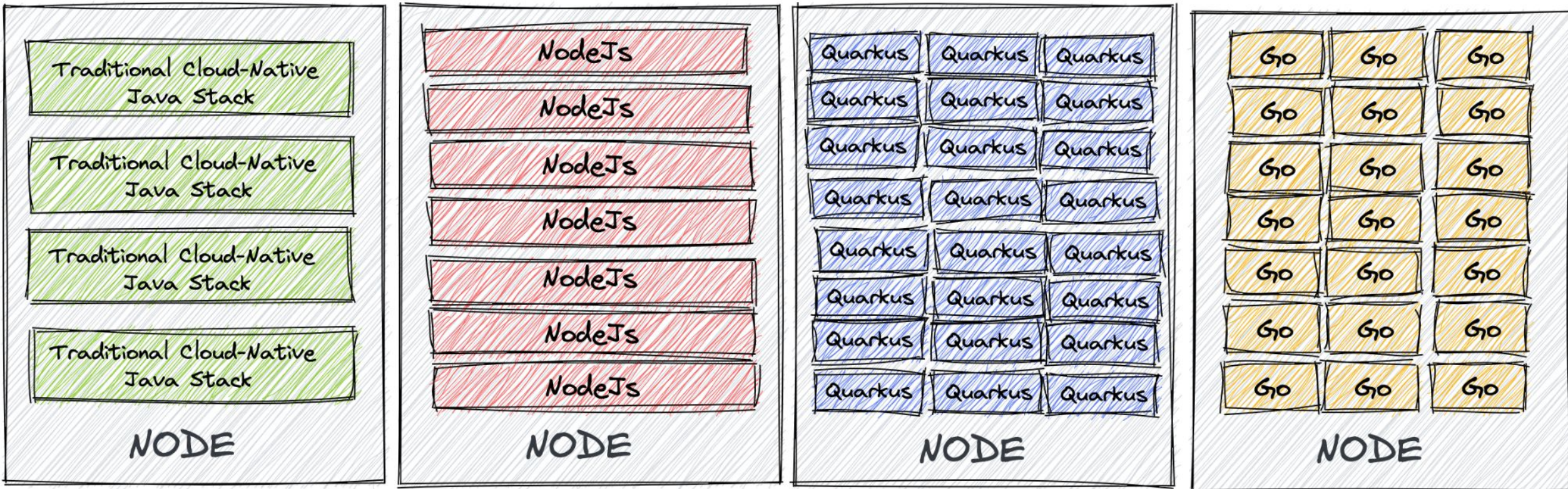


Runnable
Java app



Runnable
Native app

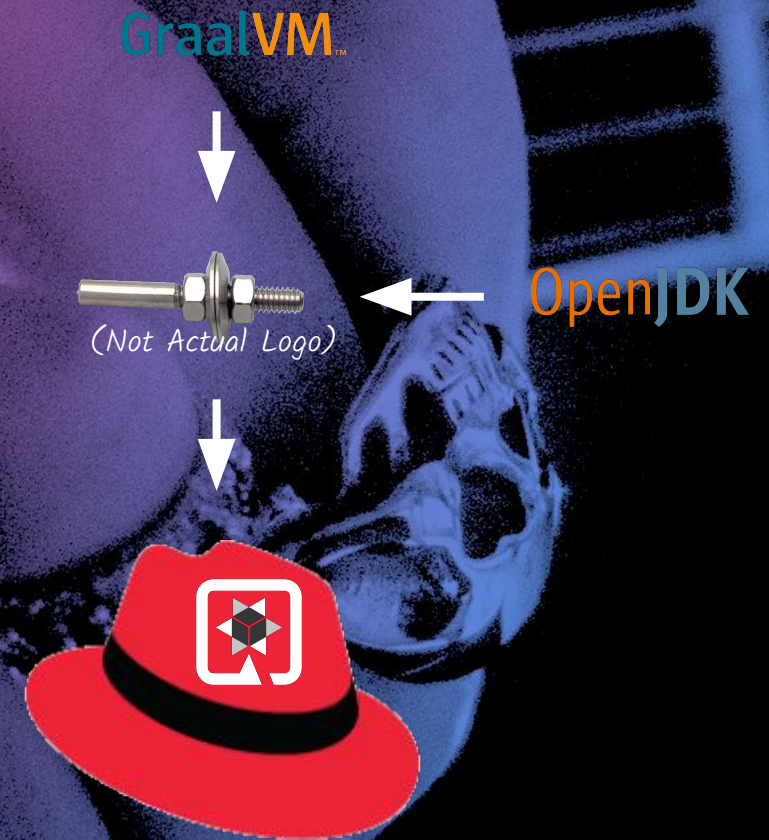
QUARKUS CONTAINERZ FIRST



Container Platform

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 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

```
import io.quarkus.funqy.Funqy;

public class GreetingFunction {
    @Funqy
    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 FUNQY



Supports dependency injection through CDI or Spring DI

```
@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:

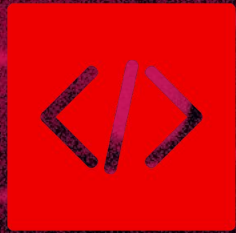
- `quarkus.kubernetes.deployment-target=knative`



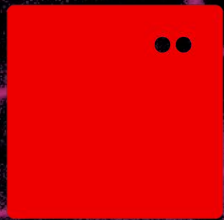
Generated `knative.json` and `knative.yml` automatically

```
{
  {
    "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



OPENSIFT



HANDS-ON!

bit.ly/quarkus-serverless-labs



Sign-Up

- *Developer Sandbox*
- *Amazon Web Services*

WRAP-UP!

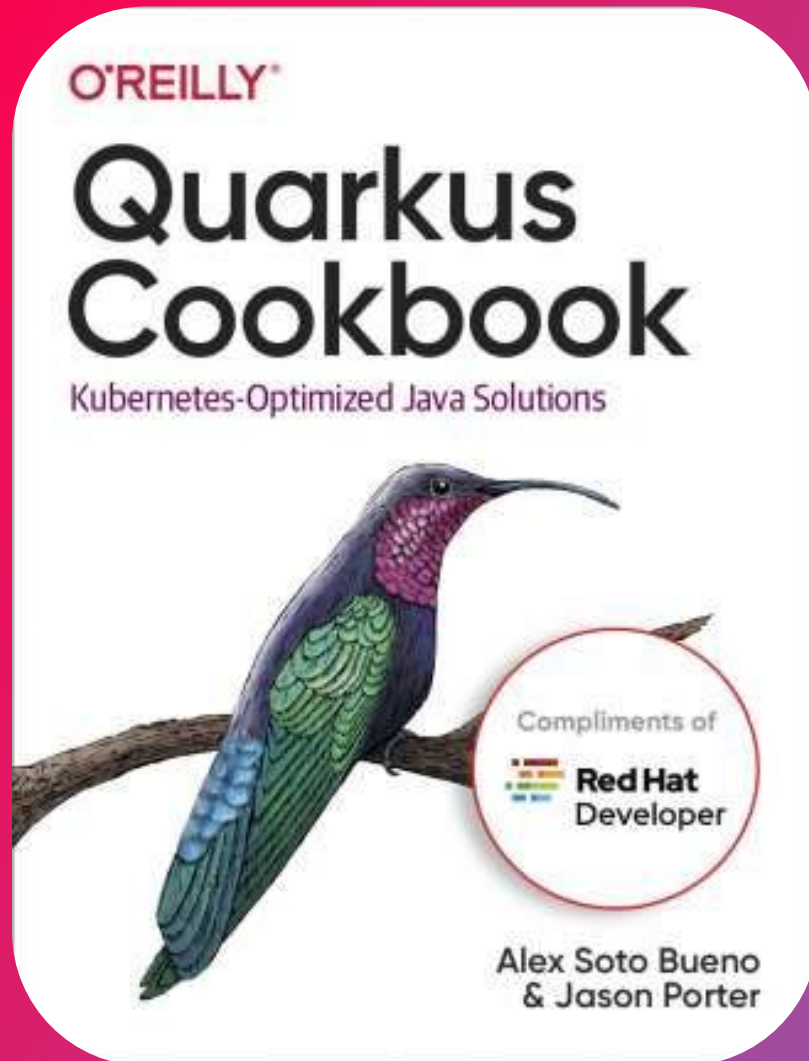


red.ht/quarkus-func

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



dn.dev/quarkusbook



bit.ly/danielohstv

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KUBERNETES LEARN BY EXAMPLE ▶ PLAY ALL

KUBERNETES LEARN BY EXAMPLE #9	KUBERNETES LEARN BY EXAMPLE #8	KUBERNETES LEARN BY EXAMPLE #7	KUBERNETES LEARN BY EXAMPLE #6	KUBERNETES LEARN BY EXAMPLE #5	KUBERNETES LEARN BY EXAMPLE #4
Persistent Volumes	ConfigMaps	Managing Secrets	DaemonSet	StatefulSets	Deployment and ReplicaSet
10:31	6:45	7:12	7:00	8:54	11:44
Persistent Volumes - Learn by Example [9]	ConfigMaps - Learn by Example [8]	Managing Secrets - Learn by Example [7]	DaemonSet - Learn by Example [6]	StatefulSets - Learn by Example [5]	Deployment and ReplicaSet - Learn by Example [4]
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QUARKUS ▶ PLAY ALL

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19:21	9:55	18:57	5:09	11:16	
Microsweeper Demo with Quarkus on Red Hat...	Build your first Java Serverless Function using...	Microsweeper Demo with Quarkus on Azure Red Hat...	Getting Started with Reactive Programming with Kotlin on...	Cloud Native Buildpacks with Quarkus	Extend Service discovery with Quarkus and Stork
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SERVERLESS & FUNCTION ▶ PLAY ALL

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9:55	6:18	12:47	15:41	12:47	34:56
Build your first Java Serverless Function using...	Drag and Drop your Quarkus Serverless App on the...	Deploying Multiple CloudNative Apps with...	Quarkus builds your AWS Lambdas	Deploying Multiple Cloud Native Apps with OpenShift...	Hybrid Serverless Development using Quarkus