

# GraalVM and Spring Native

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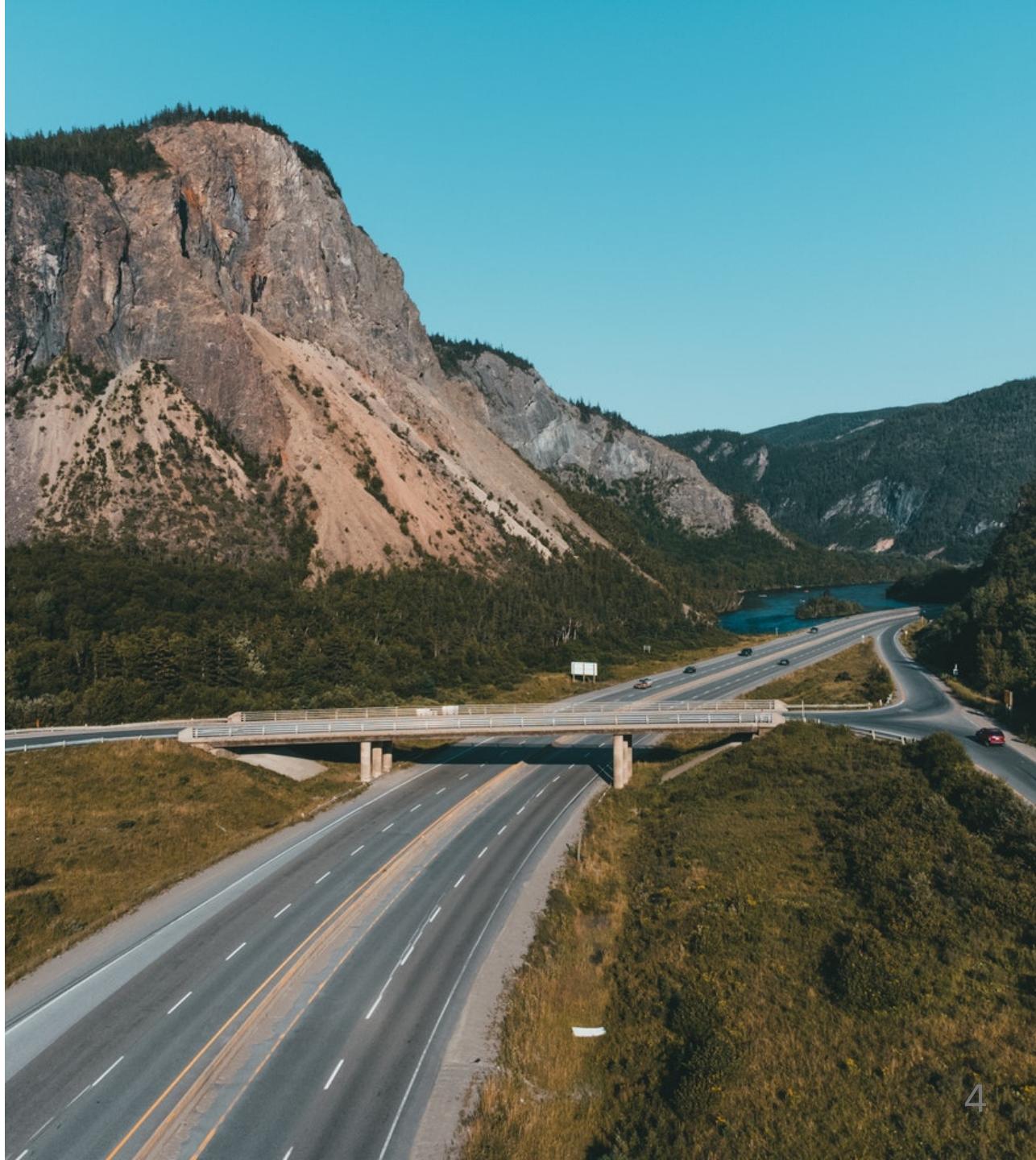
# Agenda

- What is GraalVM
- Building native images with GraalVM
- Spring Native - all you need to start with
- `@NativeHint` from Spring Native
- Code examples, not so many slides



# What is GraalVM?

- High performance JDK distribution
- Core distribution:
  - JVM
  - GraalVM Compiler
  - LLVM and JS runtimes
- Supports Java, JS, Ruby, Python, R, WebAssembly, multiple langs at once



# Getting Started

- Use SDKMan to install GraalVM
- Write a simple Java app, build, run, enjoy



# GraalVM Native Image

- AOT compile Java to a standalone executable - platform specific
- Executable includes all the code was available at **image build time**
- Substrate VM provides memory management, GC, thread scheduling, etc ordinary JVM features
- `$ gu install native-image`



# Closed World Optimizations

- Dynamic Class Loading
- Reflection
- Dynamic Proxy
- Java Native Interface - JNI
- Serialization



# Incompatible with Closed-World Optimizations

- `invokedynamic` Bytecode and Method Handles
- Security Manager



# Features that may operate differently in Native Images

- Signal Handlers
- Class Initializers
- Finalizers
- Thread methods like  
`Thread.stop()`
- Unsafe Memory Access
- Debugging and Monitoring



# Spring Native

Spring Native provides support for compiling Spring-based apps using GraalVM native image compiler

- spring-native
- spring-native-configuration
- spring-native-docs
- spring-native-tools
- spring-aot
- spring-aot-test
- spring-aot-maven/gradle-plugin



# Summary

Coming soon

<https://github.com/aabarmin/epam-spring-native-example-2022>

