

Break New Ground



“If I could change the world...”

— Eric Clapton

Break New Ground

The quest to the language Graal: one JVM to rule them all

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Safe Harbor Statement

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GraalVM™

PERFORMANCE

INTEROPERABILIDADE

TOOLING

Cenário Atual

Apenas linguagens com alto investimento

Alto custo de serialização

Cada linguagem com suas próprias ferramentas (debug, profiling, etc)

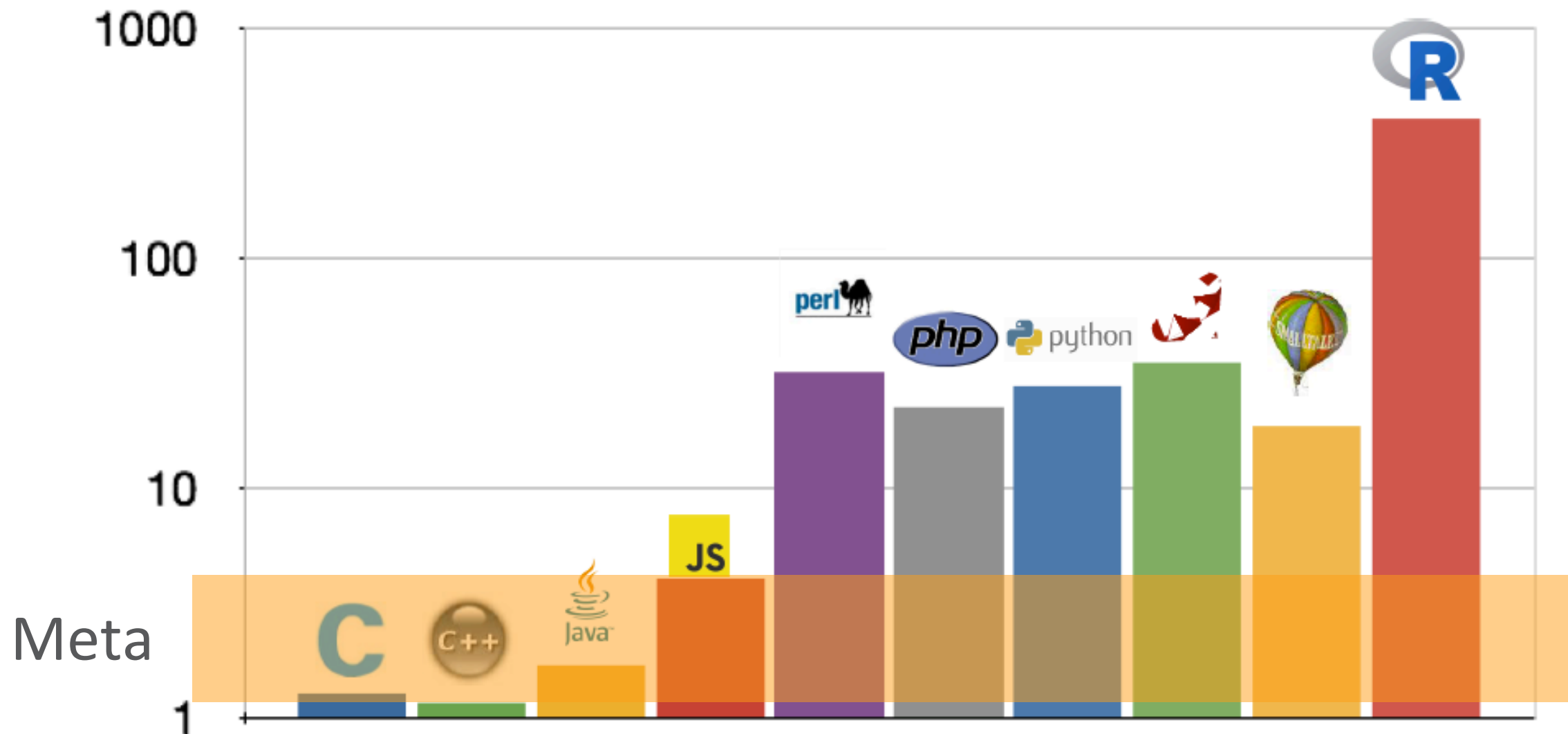
Graal VM

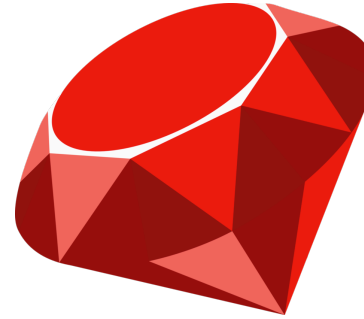
Alta performance para todas as linguagens

Zero overhead

Ferramentas únicas para todas as linguagens

Comparação entre linguagens





Impl

Impl

Impl

Impl

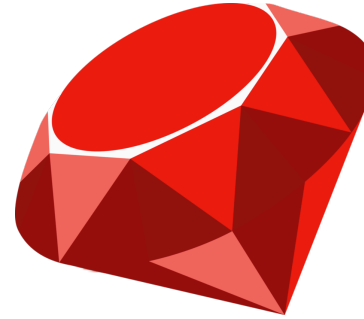
VM

VM

VM

VM



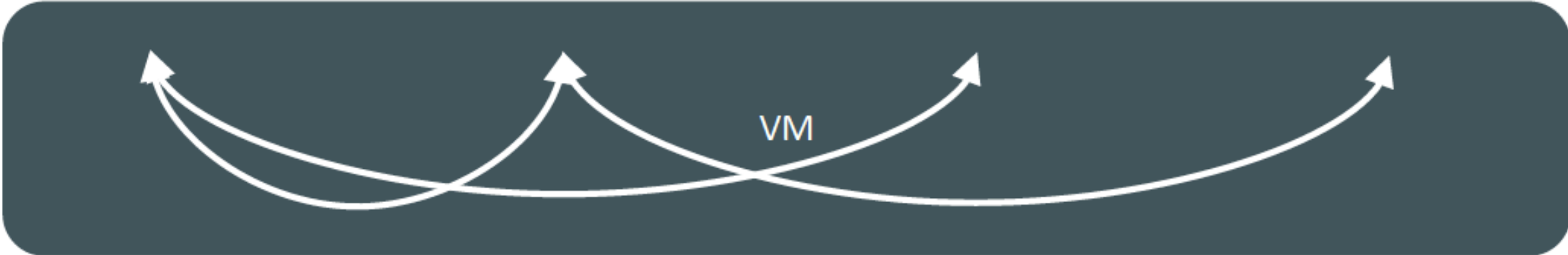


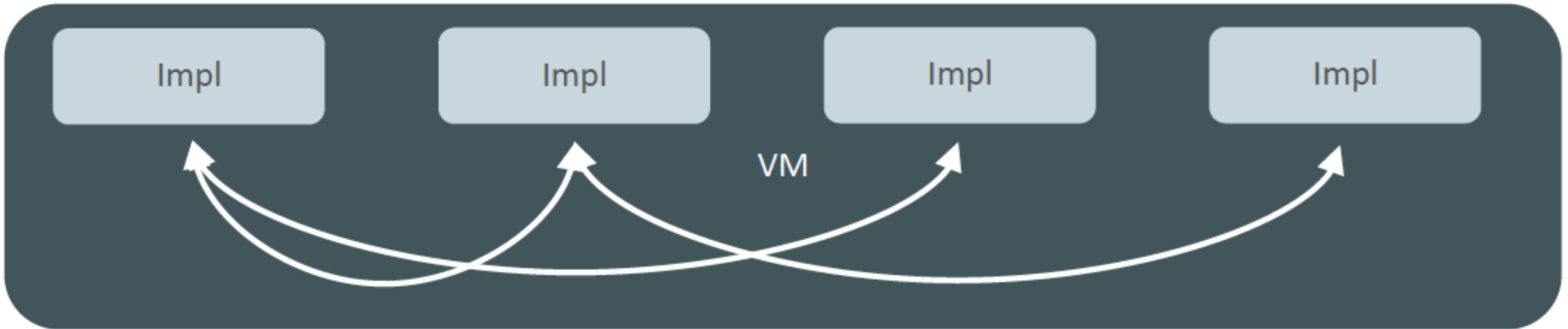
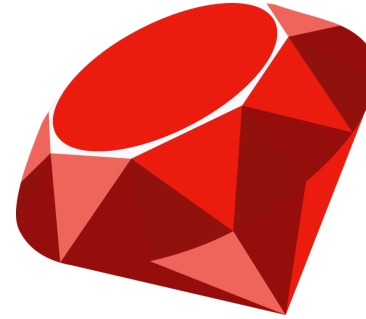
Impl

Impl

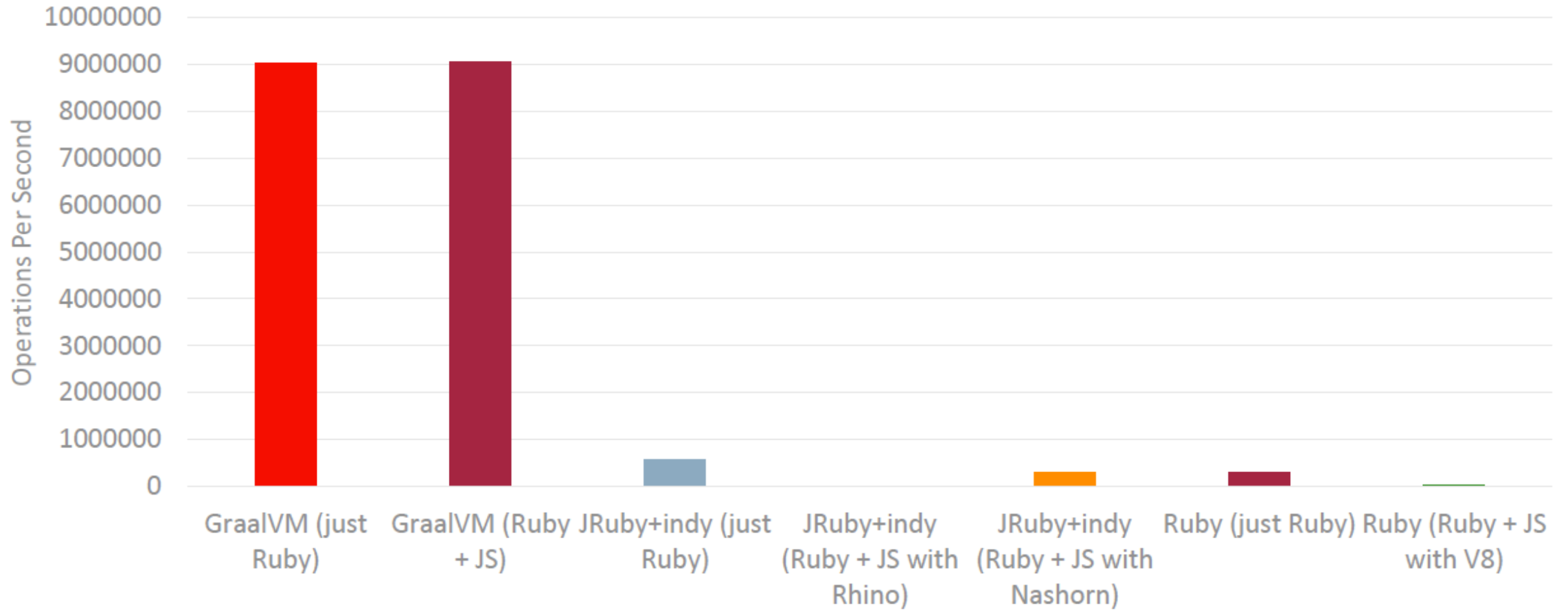
Impl

Impl





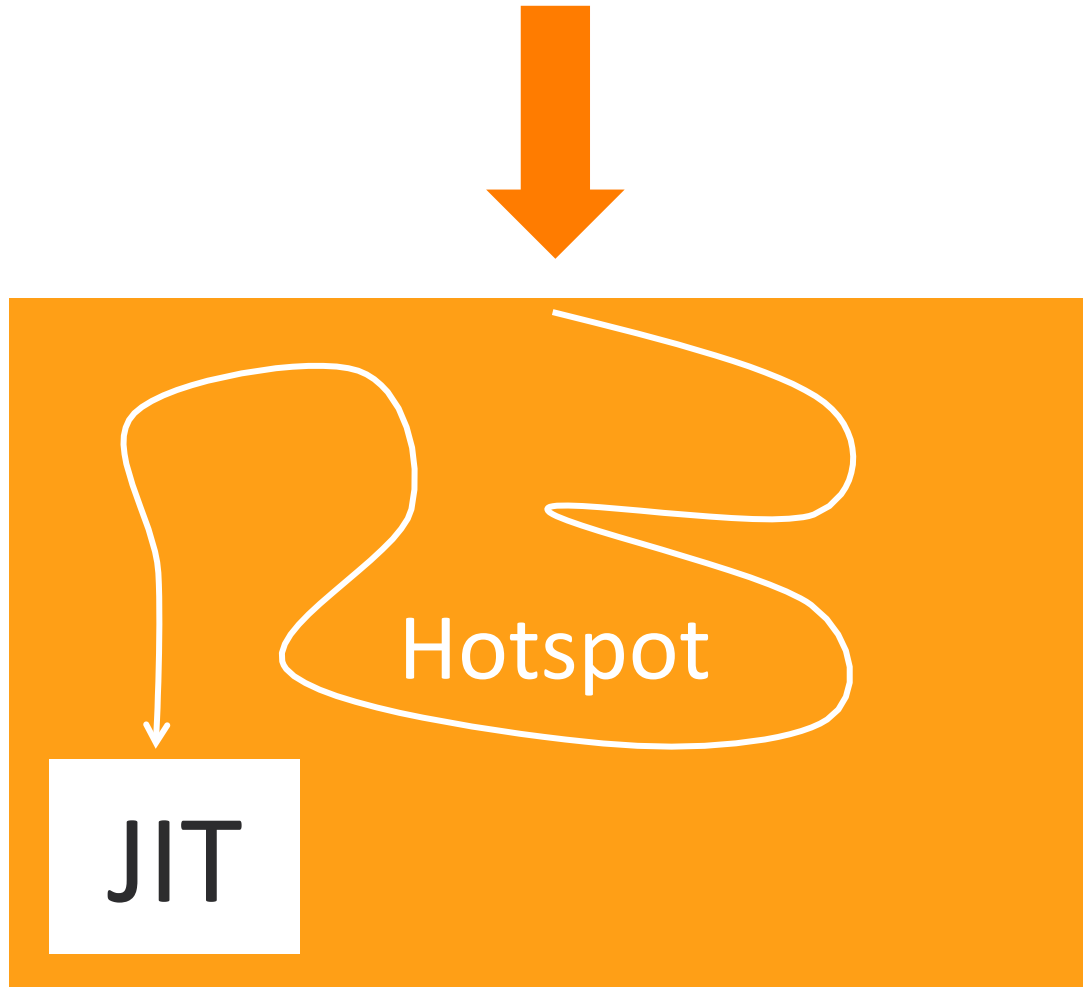
Comparativo `clamp` em vários cenários

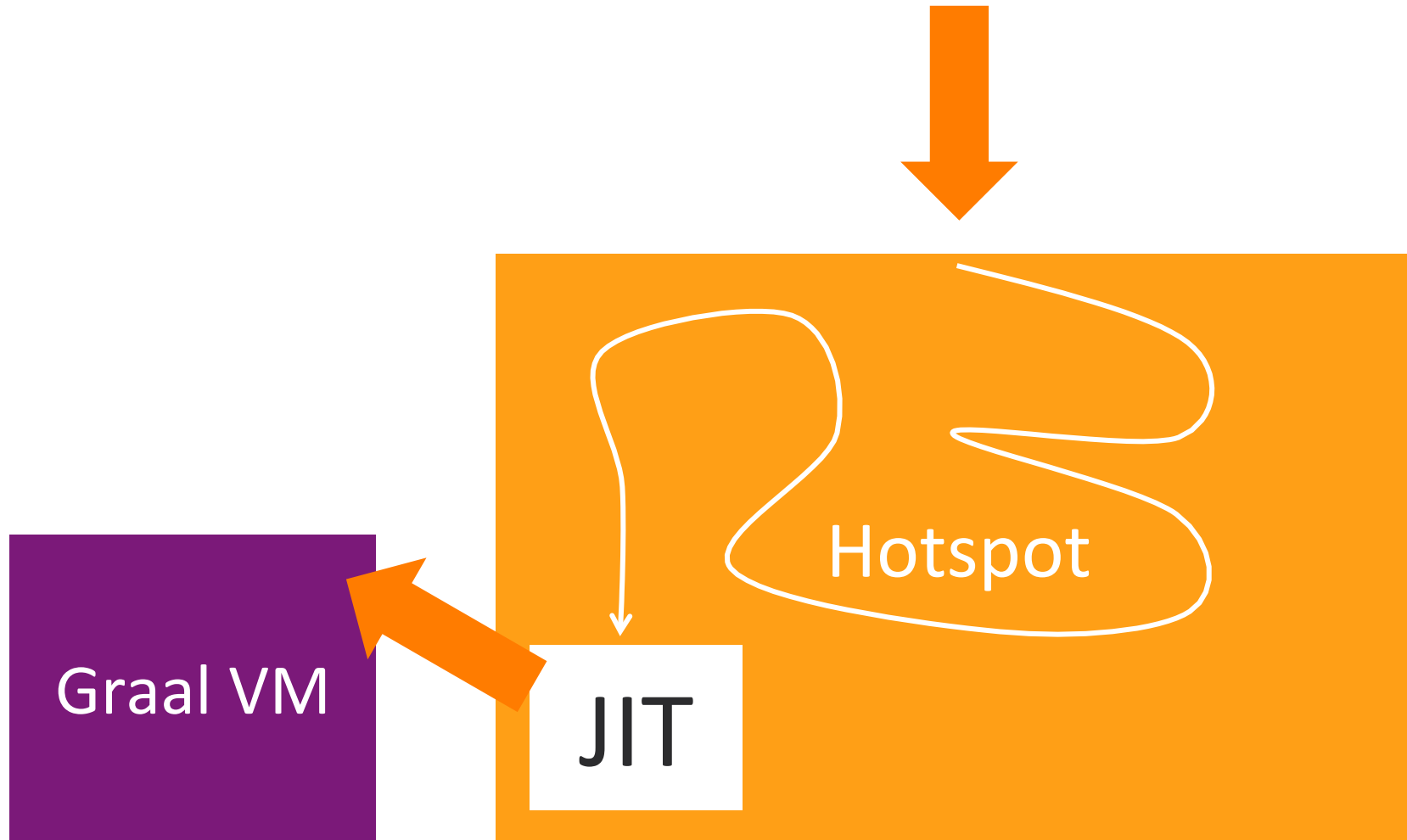


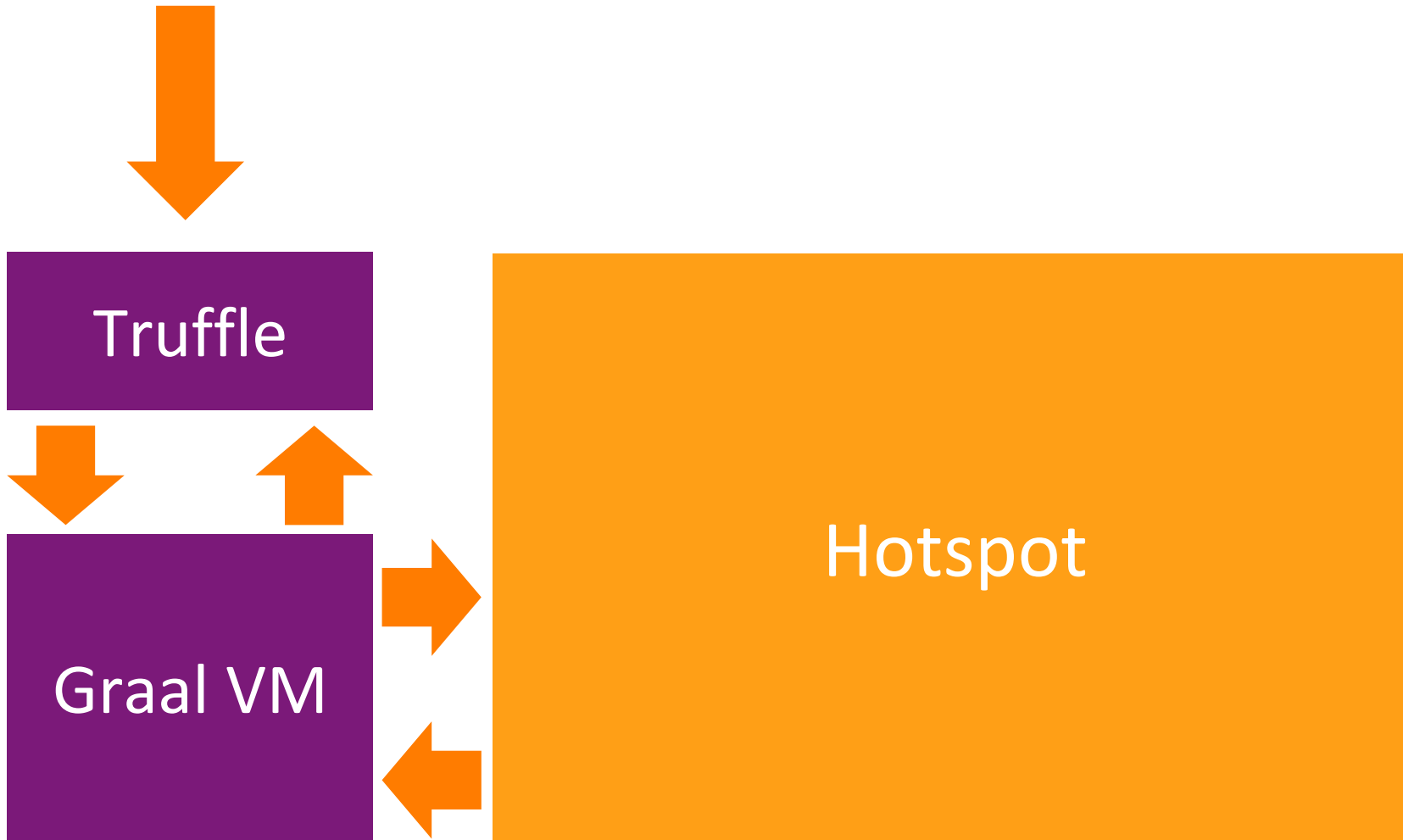


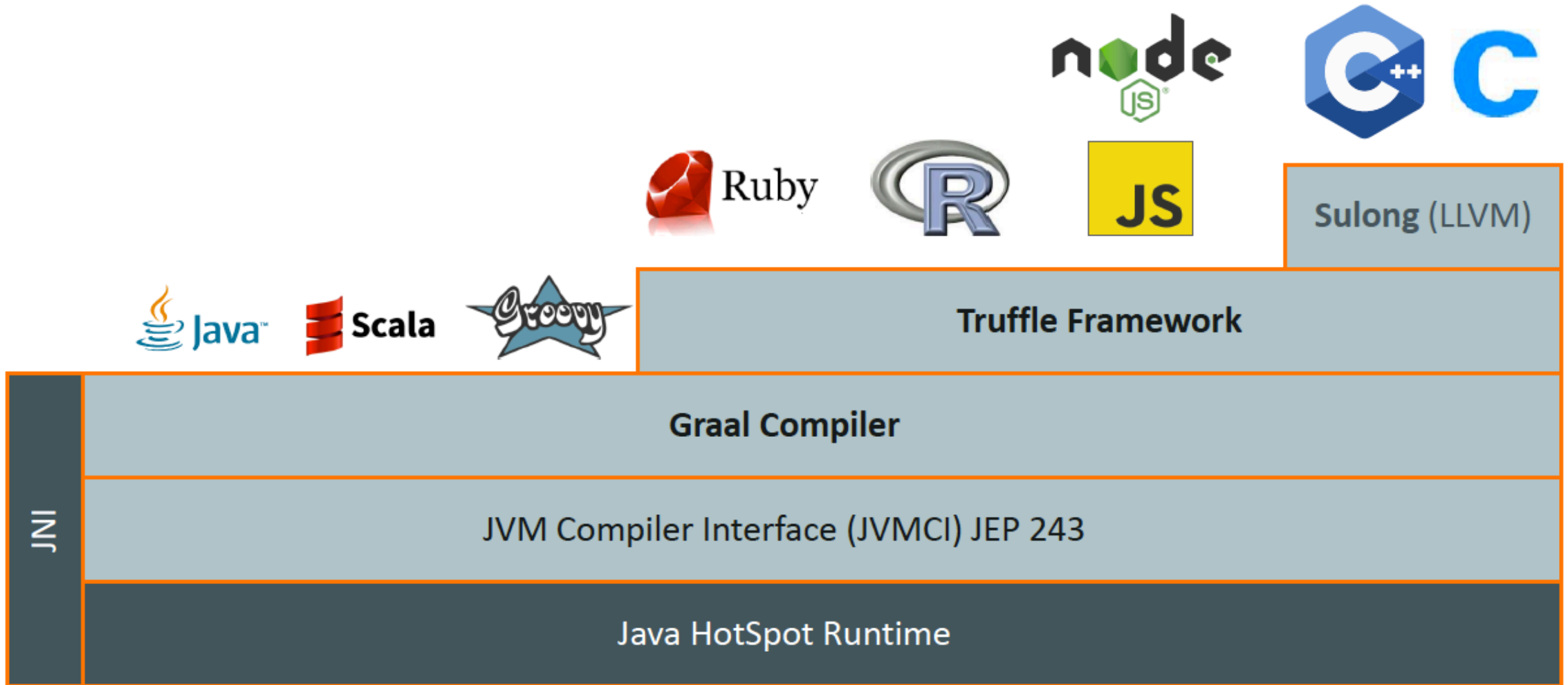


Implementações convencionais emitem bytecode para a JVM – o mesmo que é feito pelo compilador Java





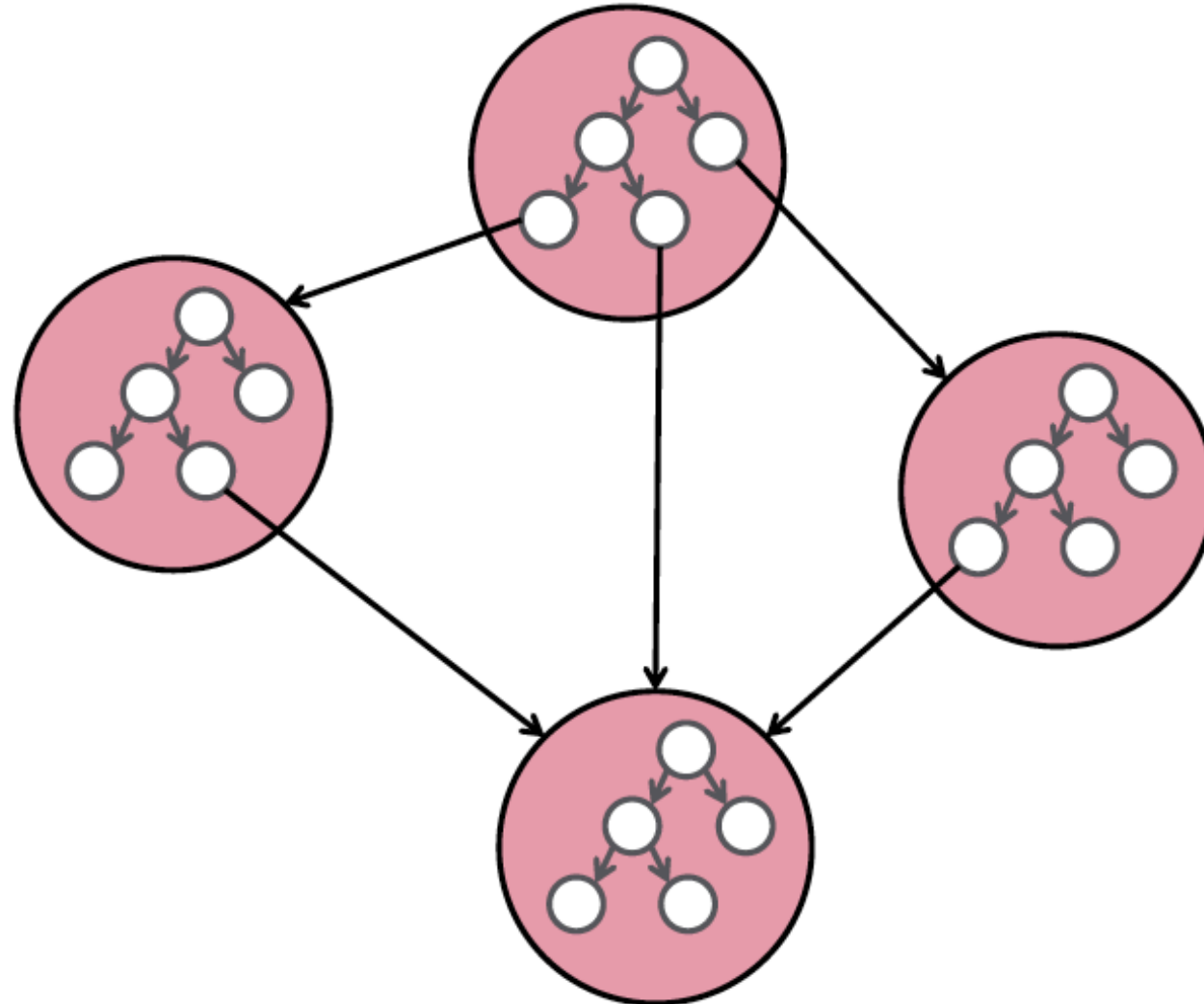




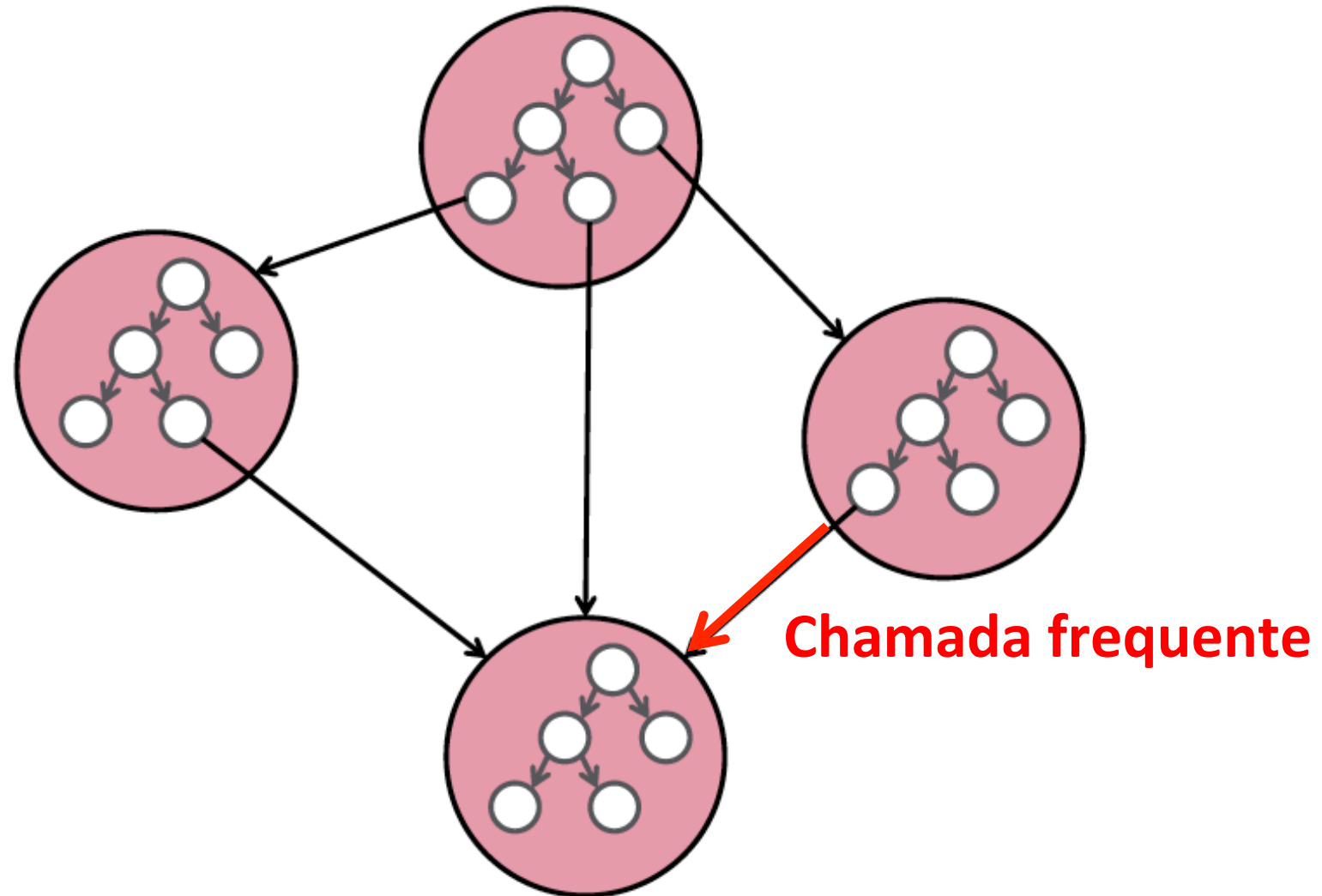
Esclarecendo terminologias e funcionalidades

- Graal é um compilador JIT para a JVM
- Graal VM é a JVM com Graal, Truffle e as linguagens incluídas
- O Truffle usa o Graal por você

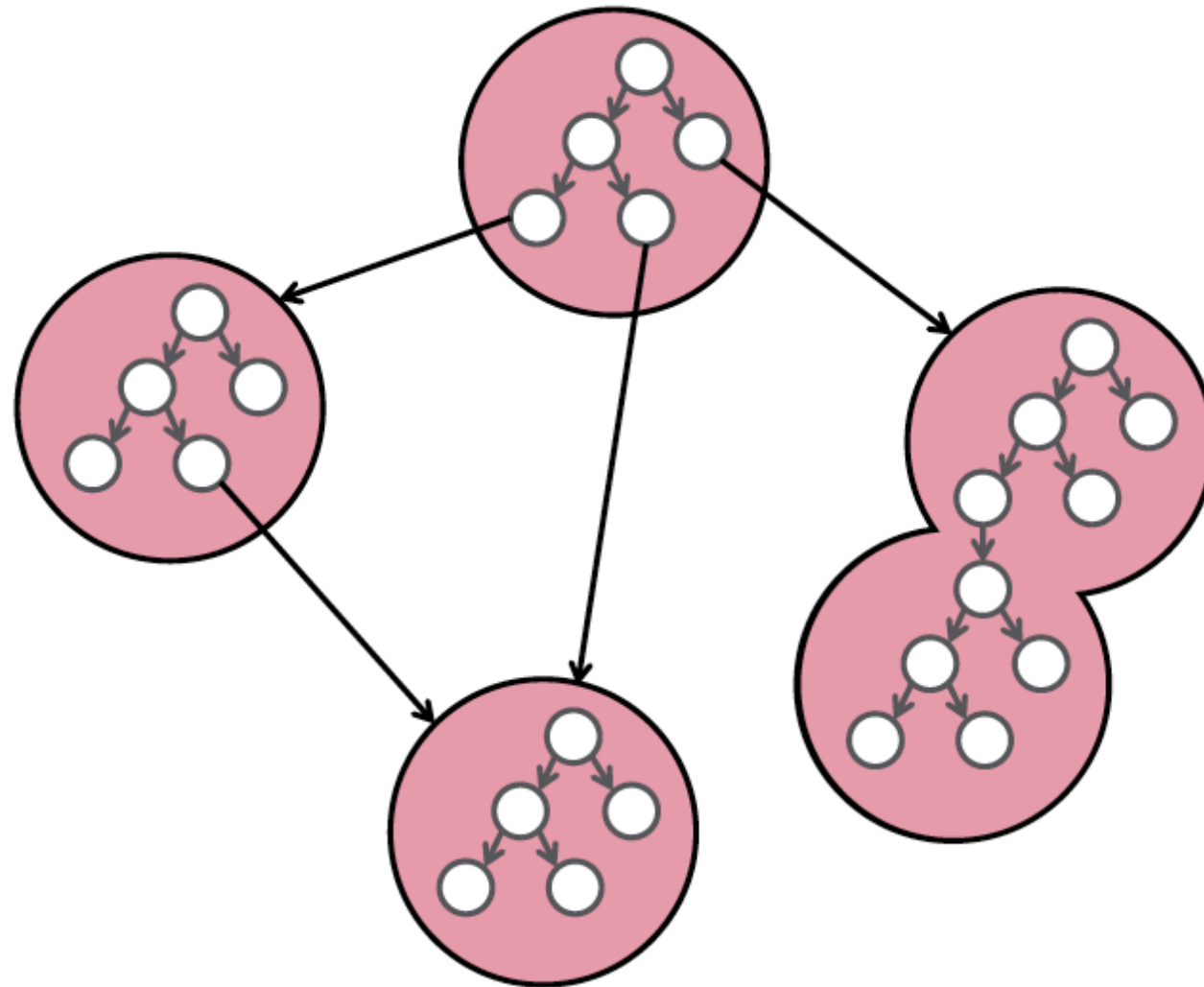
Interface entre Truffle e Graal



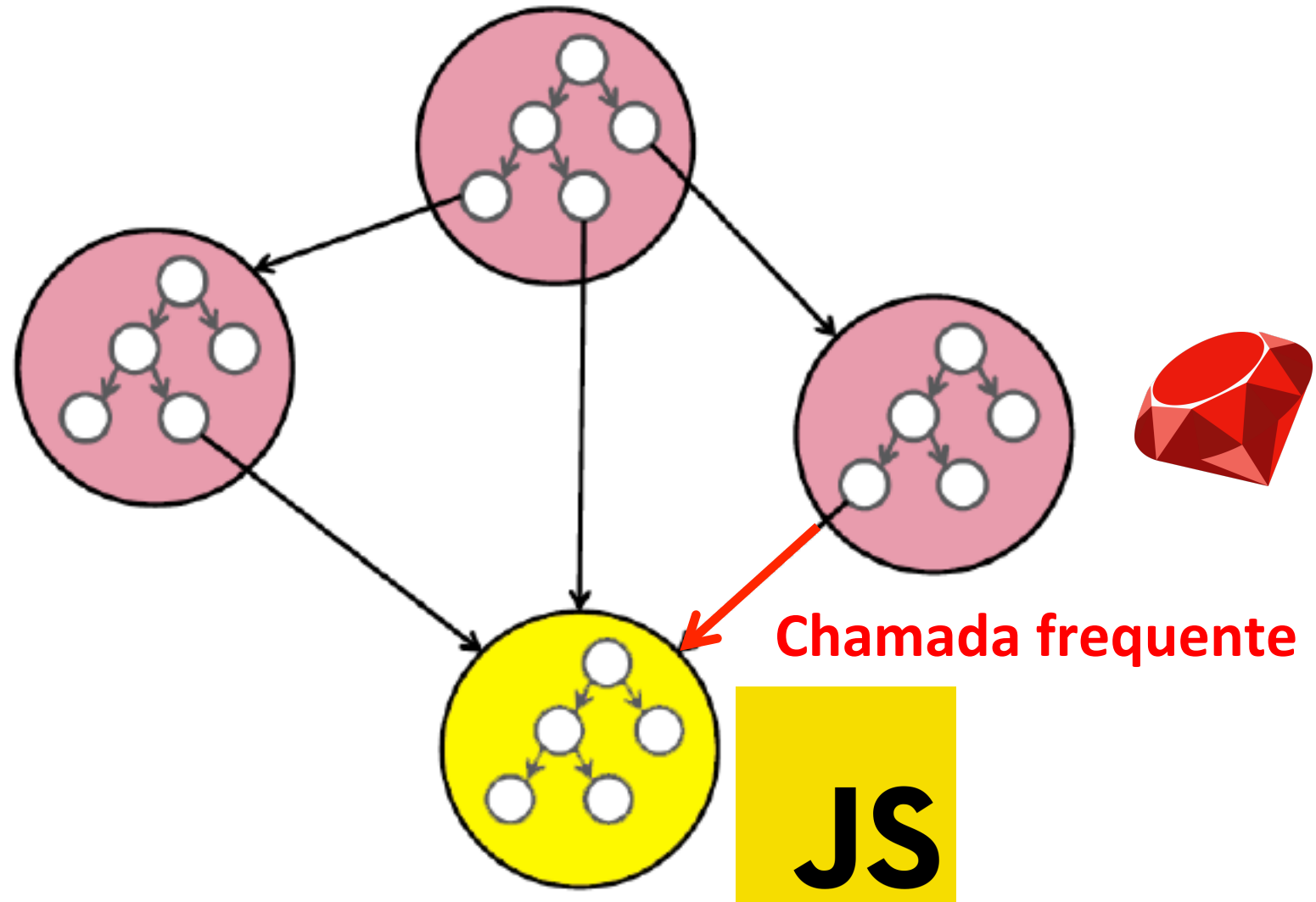
Interface entre Truffle e Graal



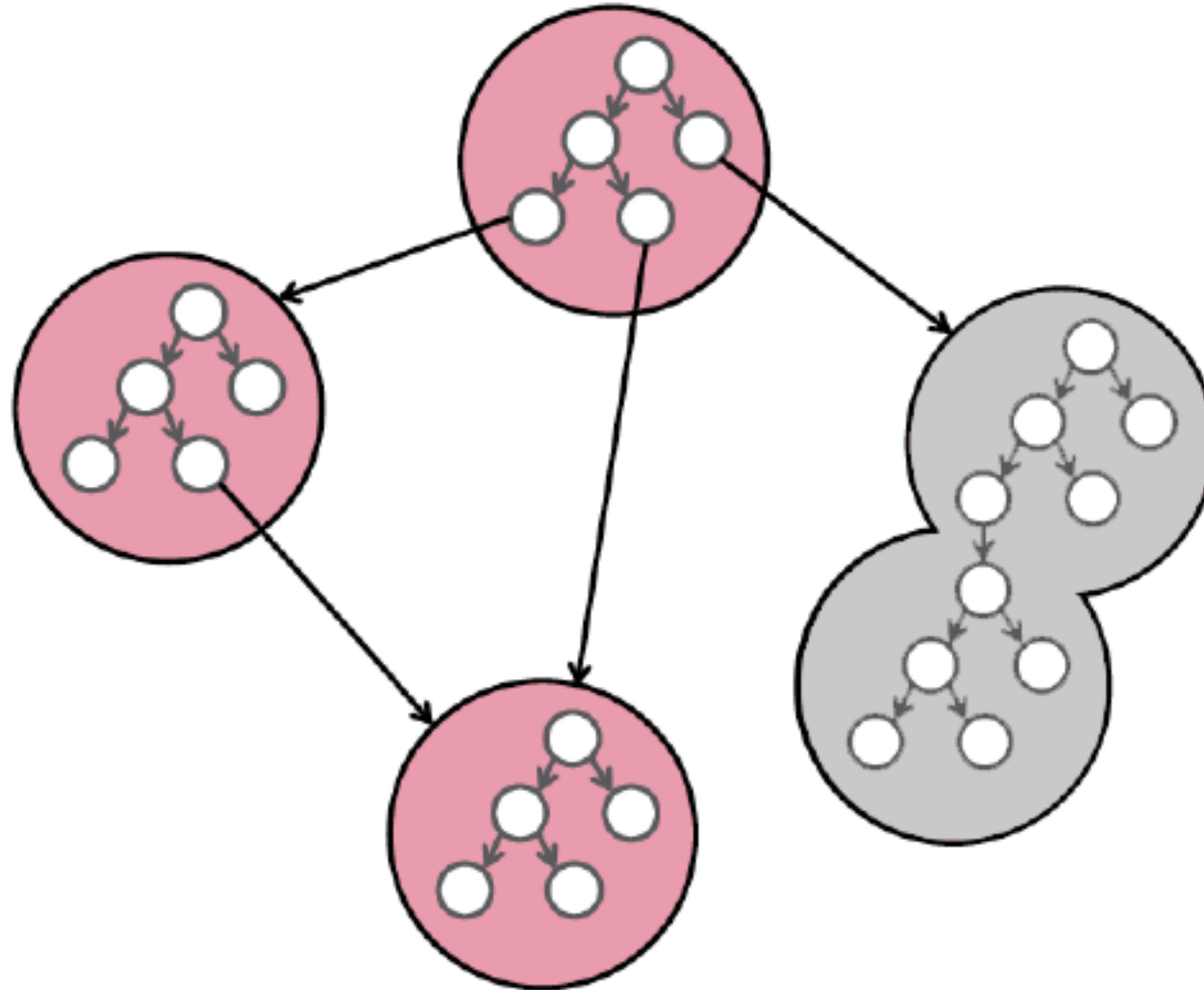
Interface entre Truffle e Graal



Interface entre Truffle e Graal



Interface entre Truffle e Graal



- A ideia não é misturar código de diferentes linguagens
- Remove o quesito “performance” ao escolher uma linguagem
- Permite intercâmbio de bibliotecas entre linguagens

Graal VM – Tudo em um único pacote

- Inclui
 - JVM (RE ou DK)
 - Java
 - Javascript
 - Ruby
 - R
 - Outras a caminho!
- Mac ou Linux



Java 10+

```
java -XX:+UnlockExperimentalVMOptions -XX:+UseJVMCICompiler -jar ...
```

Parabéns, você está usando Graal! 😊

Porque o Graal VM é mais rápido?

- Anos de pesquisa para criar um compilador JIT mais rápido
- Compilador JIT escrito em linguagem de alto nível (Java) ao invés de C++, permitindo sua evolução de forma mais fácil e segura
- Otimizações de *escape analysis* e *inlining* (arquitetura de processamento)

Está pronto para produção?



Twitter & Graal VM

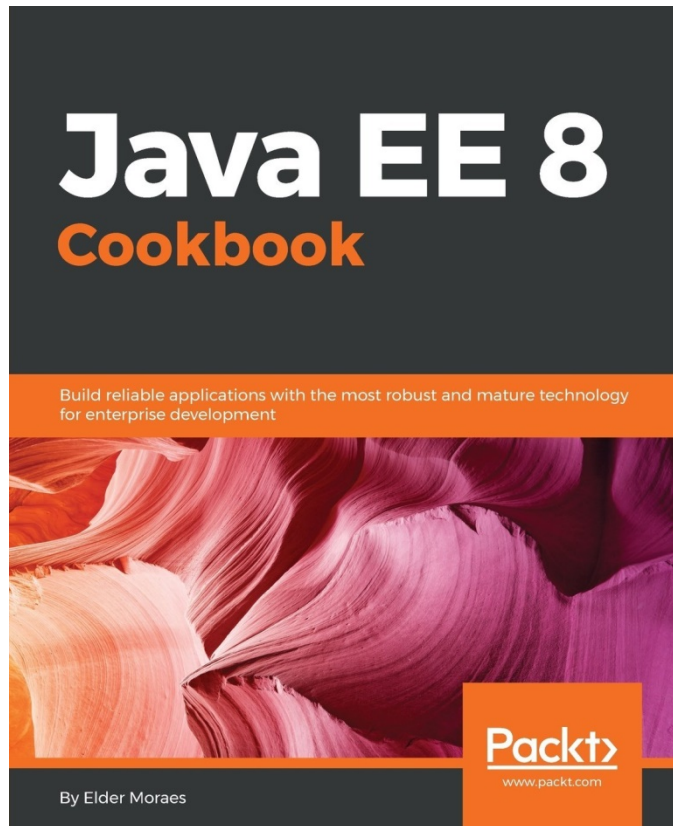
- Está em produção no Twitter!
- Eles dizem que já economizaram “centenas de milhares de dólares”
- Microservices em Scala
- Utilizam a versão community

13% mais rápido com Graal VM

DEMO GODS



PLEASE MAKE THIS DEMO WORK



@elderjava

book.eldermoraes.com

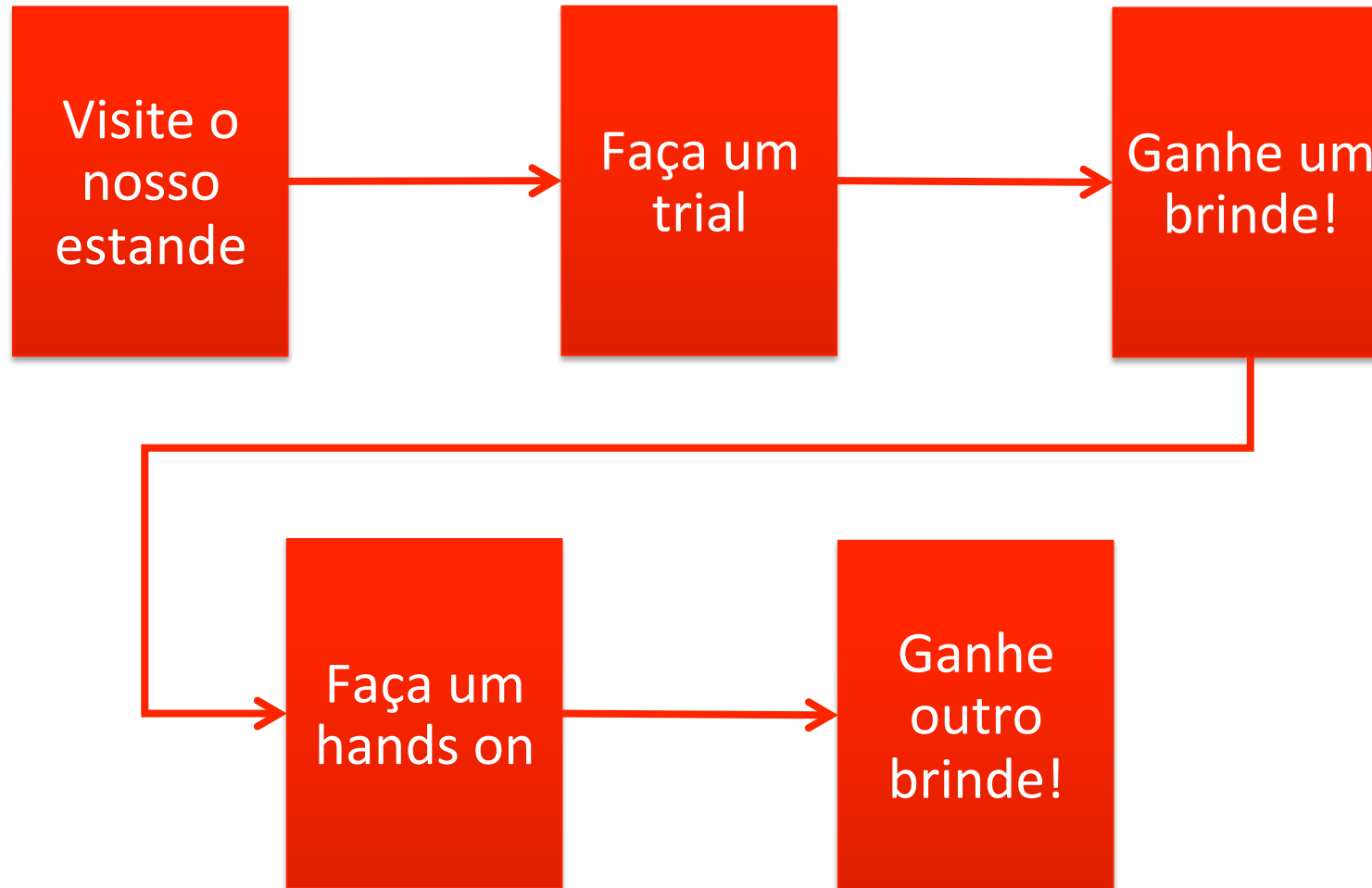
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