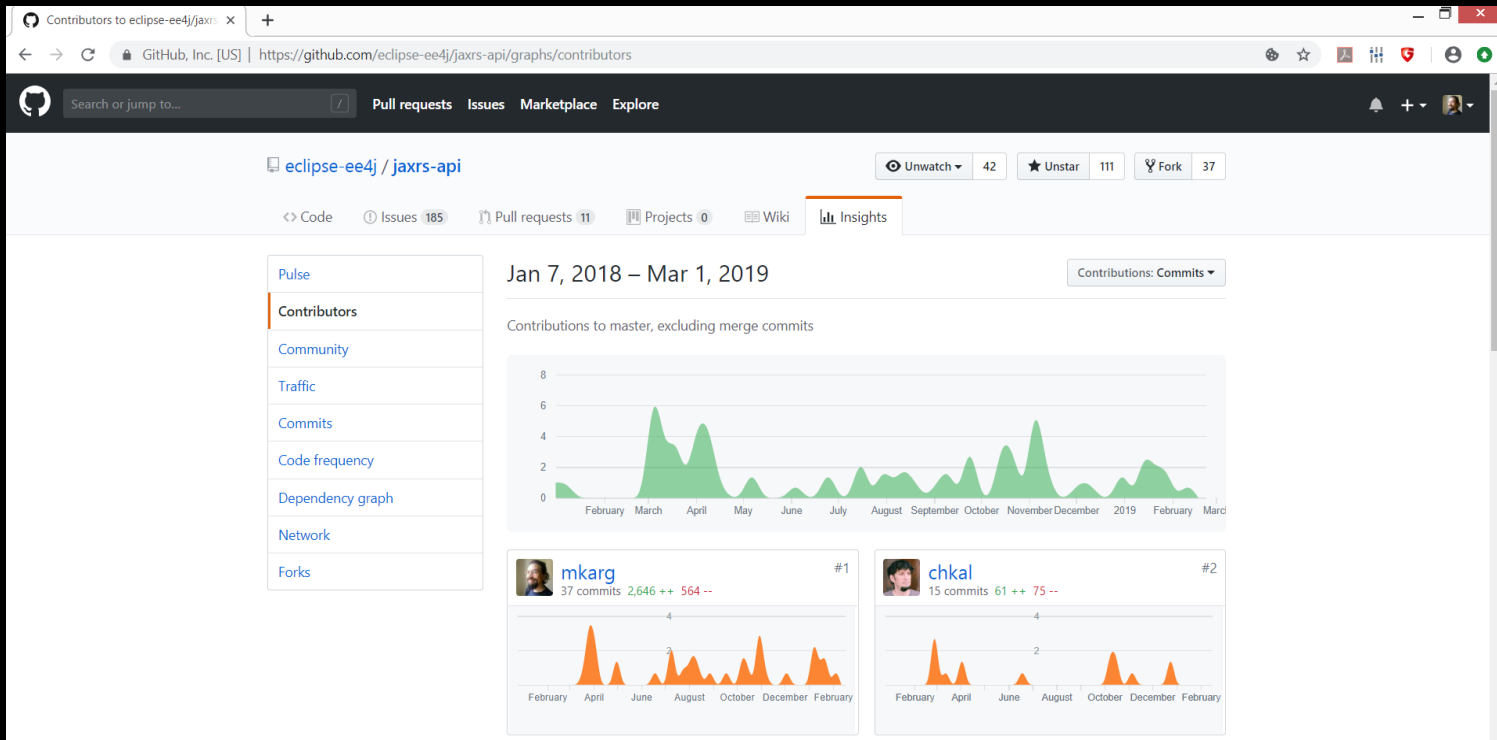


# RESTful Cloud- and Edge-Computing with JAX-RS 2.2 and Beyond

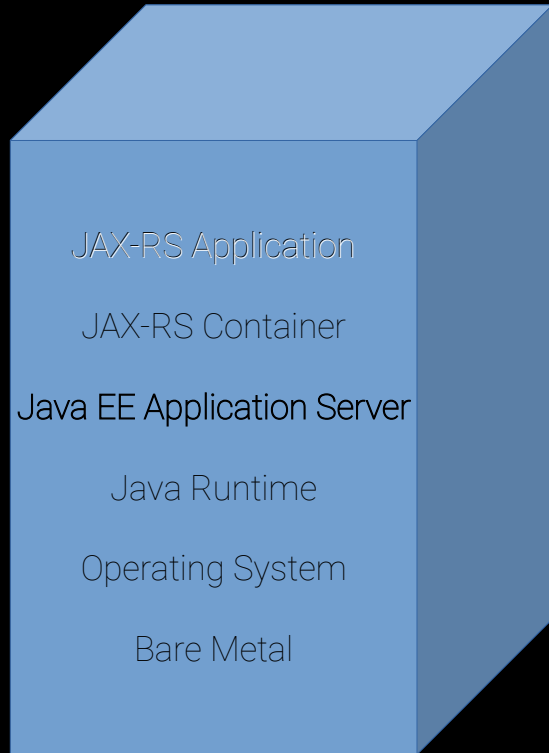
Markus KARG  
markus@headcrashing.eu



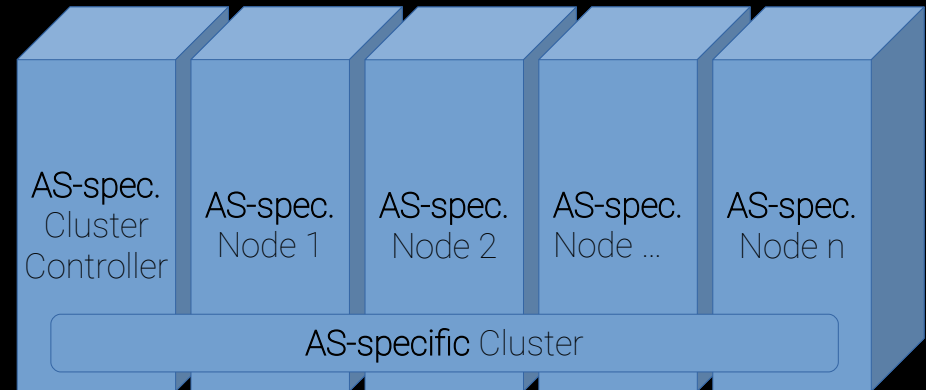
# About Me



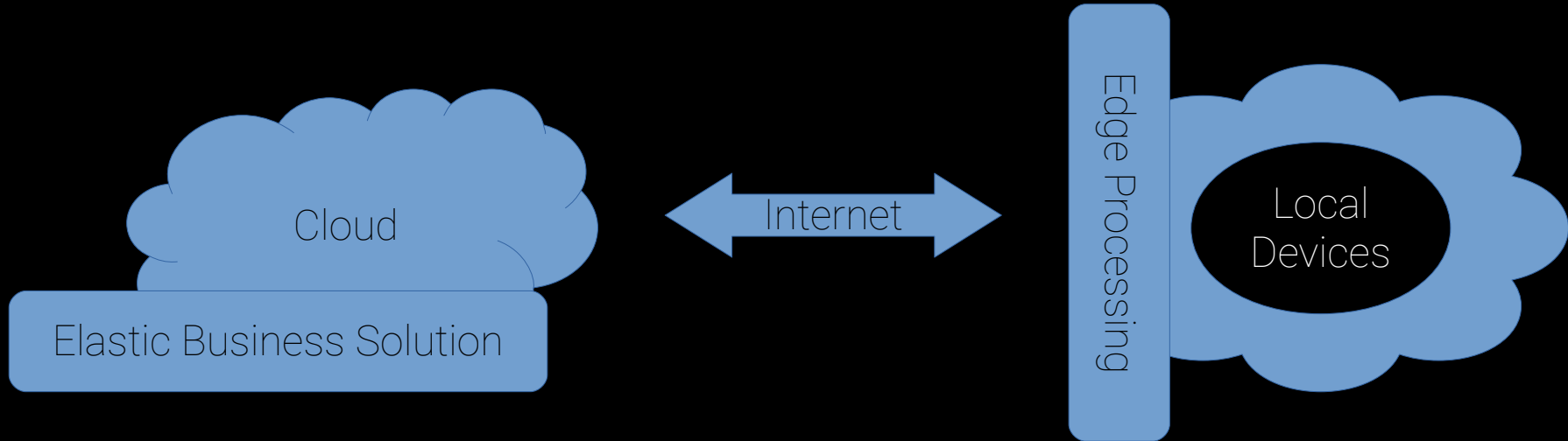
# Application Servers: Old-School Scaling



Clustered Application Server Nodes  
e. g. GlassFish including Jersey



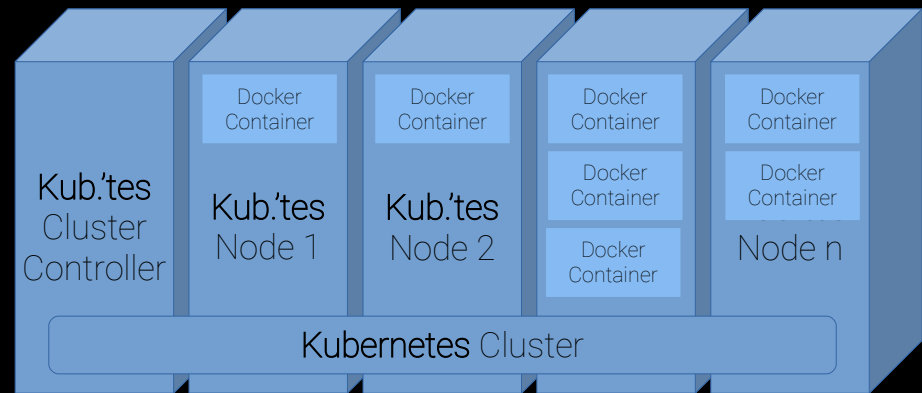
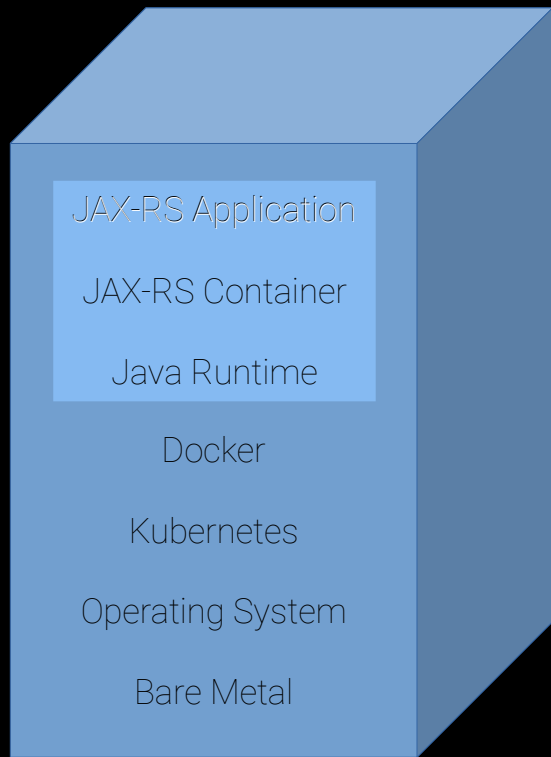
# Cloud + Edge Scenario



Throughput in rural areas?  
Average roundtrip time?  
Internet link downtimes?

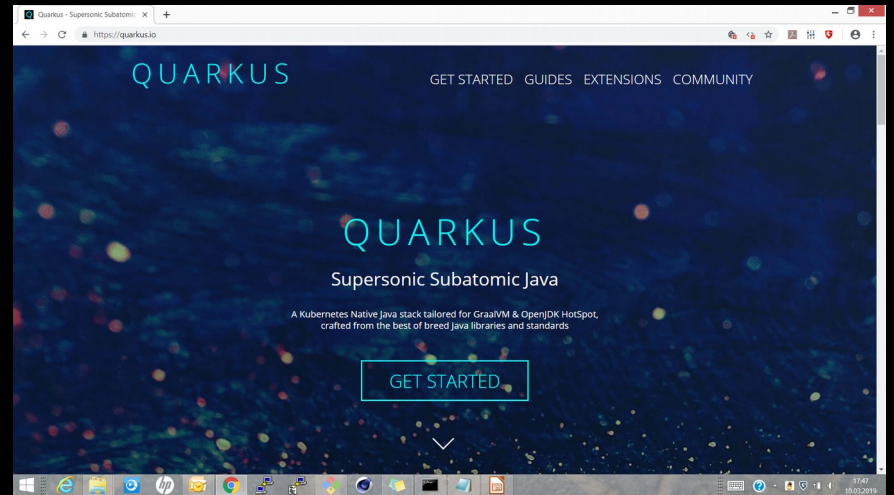
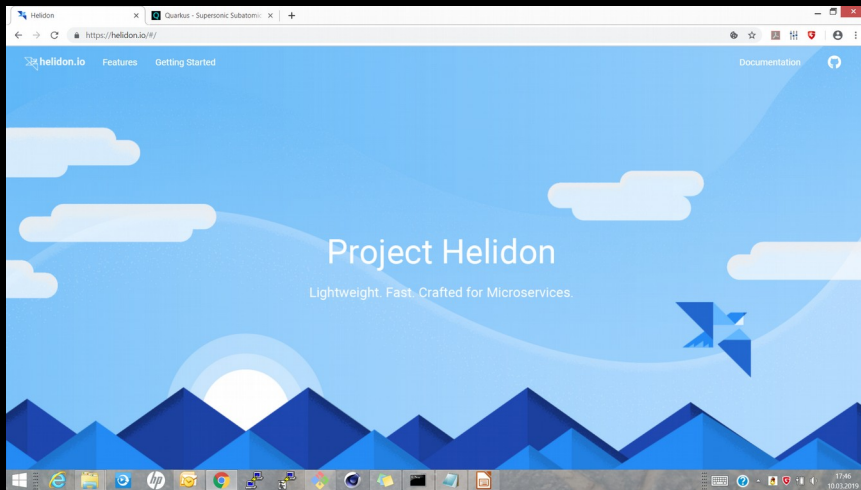
# Cloud Computing: The Modern Approach

Elastic creation and disposal of lightweight processes (e. g. Kubernetes with Docker)

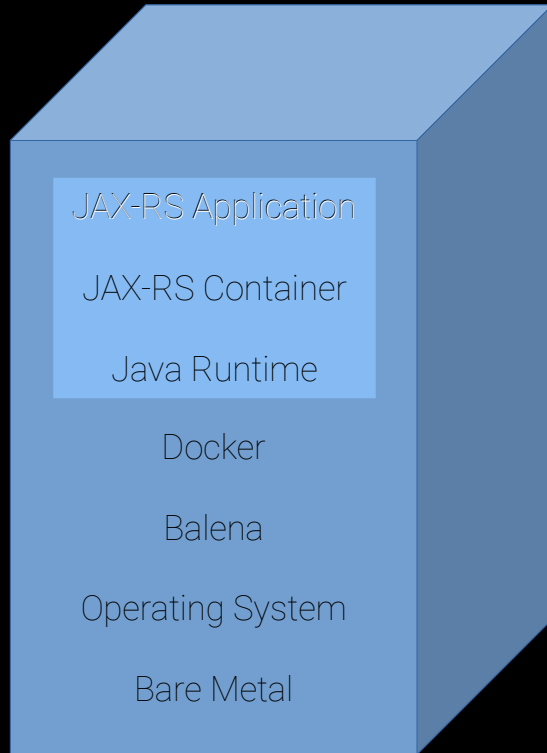


# Cloud Computing

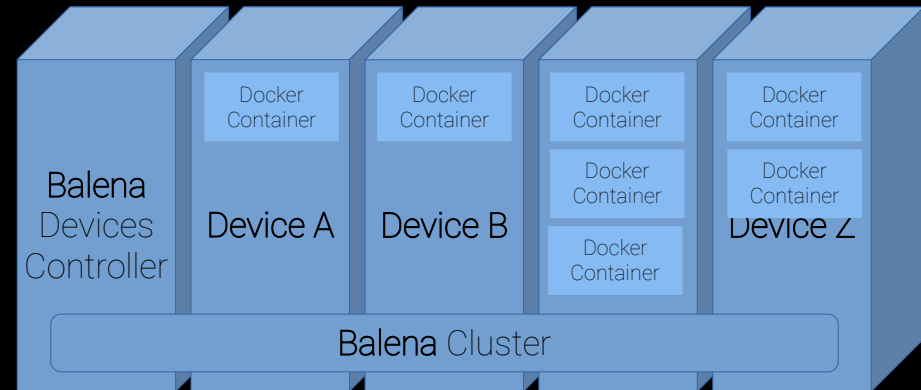
JAX-RS + Netty + Docker + ... = Cloud Native Java



# Edge Computing: Cloud Node In-a-Box



Static creation of lightweight processes  
(e. g. balena a.k.a resin.io with Docker)



# Edge Computing

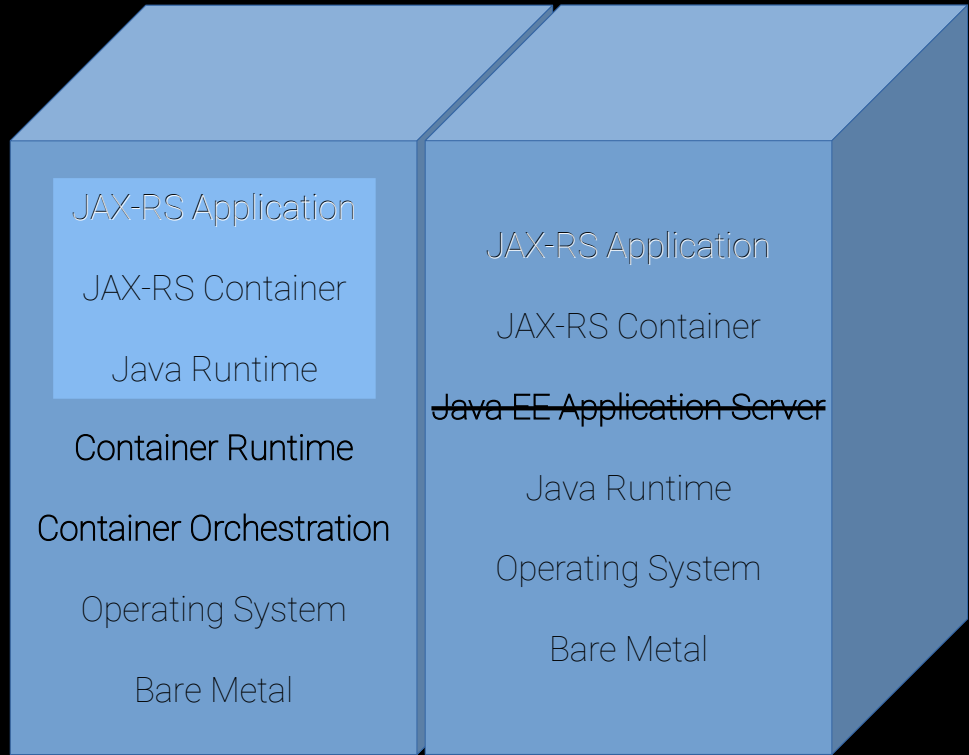


5 x 2,5 cm  
1 Core @ 1 GHz  
256 MB RAM  
100 Mb/s LAN  
\$ 10

Not always a server as you expect it!

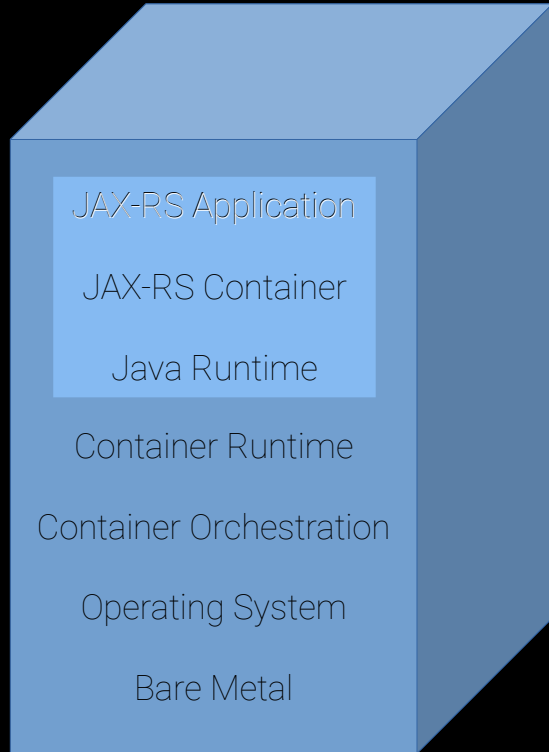


# Differences from JAX-RS viewpoint



container runtime: added  
container orchestration: added  
java ee application server: gone!  
java ee http server: gone!  
java ee configuration: gone!  
java ee resources: gone!

# Effects upon JAX-RS



should start and stop *instantly*  
should consume less resources  
must *provide* http server  
must read *external* config  
must accept *application*-provided resources

# The JAX-RS Answer: Proposed Roadmap

## JAX-RS 2.2 [Q1/2019]: Java SE Bootstrap API

(instant on/off, low resource, includes http server, reads external config incl. optional support for Microprofile Config API)

## JAX-RS 2.3 [Q2/2019]: CDI 2.0 Support – Deprecate @Context

(accept *application*-provided resources)

<https://github.com/eclipse-ee4j/jaxrs-api/wiki/Roadmap>

# JAX-RS Specification Roadmap

JAX-RS 2.4 [TBD]: JPMS, Java 9

JAX-RS 3.0 [Q4/2019]: Replace @Context by @Inject

WARNING: You MUST use CDI now!

JAX-RS 3.1 [TBD]: Flow API, NIO

...

# JAX-RS 2.2: Java SE Bootstrap API

instant on/off – boot in one second

low resource – run on limited devices

includes http server – choose by actual need

reads external config – from app, controller or orchestrator

optional support for Microprofile Config API – cloud standards

# JAX-RS 2.2: Java SE Bootstrap API

(live coding)

# LGTY?

<i>Platform (1 CPU Core)</i>	Jersey + Netty JAX-RS 2.2	Microprofile JAX-RS 2.1	Java EE Server JAX-RS 2.1
<i>Boot Time</i>	~ 2.5s	(~ 10s)	(~ 60s)
<i>JAR Size</i>	7 MB	70 MB	142 MB
<i>Java -Xmx</i>	7 MB	(?)	(?)
<i>Java -Xms</i>	1 MB	(?)	(?)
<i>Docker -m</i>	< 32 MB	(?)	(?)

# Questions?

<https://github.com/eclipse-ee4j/jaxrs-api>

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