



# QUARKUS

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## *Crafting Intelligent GitHub Bots*

Georgios Andrianakis, Principal Engineer

@geoand86



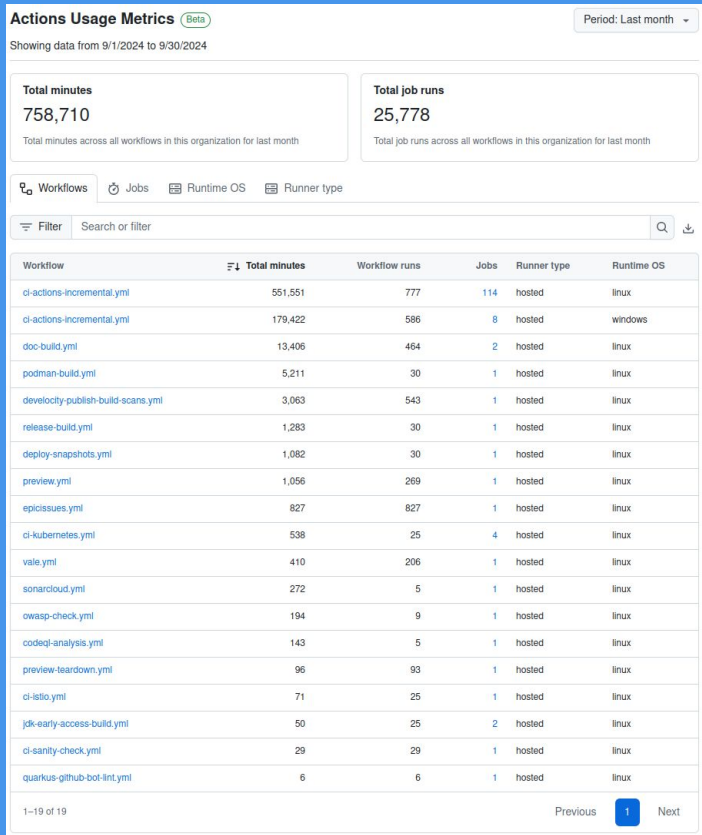
&

Guillaume Smet, Principal Engineer

@gsmet\_

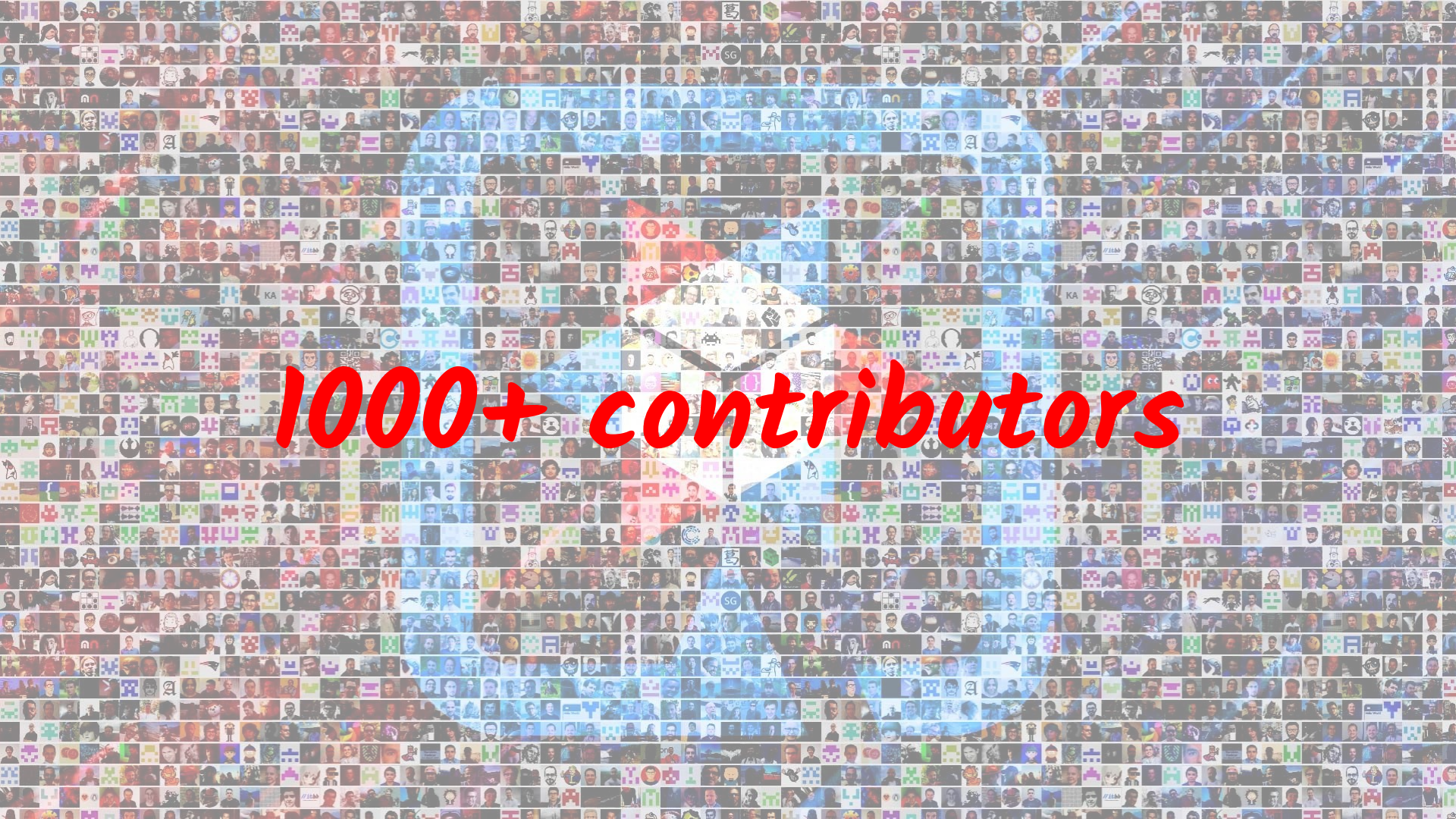


# How popular is Quarkus



**There are too many commits to generate this graph.**

More information about this data can be found in the [activity documentation](#).

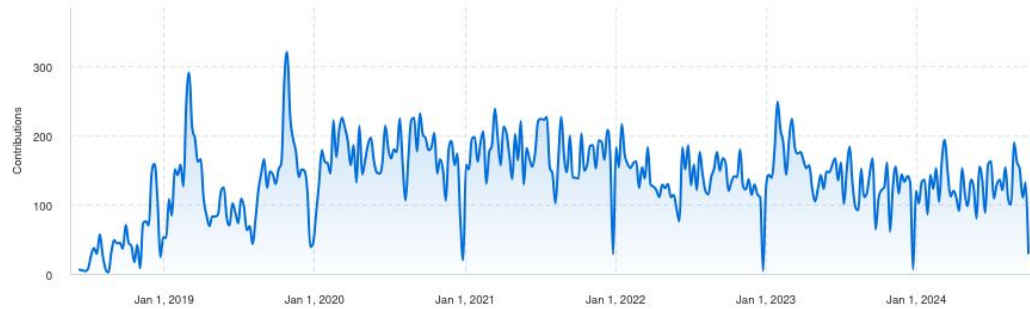


**1000+ contributors**

# Who we are

## Commits over time

From Jun 10, 2018 to Sep 29, 2024

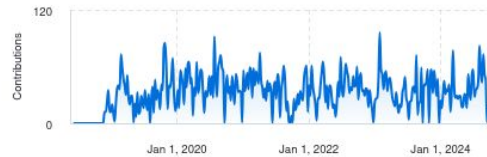


**gsmet**

10,704 commits

#1

...

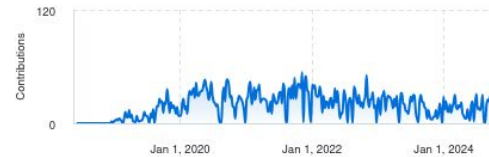


**geoand**

6,168 commits

#2

...



# *Our path to automation*

*“Death by a thousand papercuts”*

*Who uses GitHub?*

*This one is easy.*

*Who has developed a GitHub App?*

*Getting trickier...*

*Guillaume is in the middle of a coding session and...*


*“Hey Guillaume, can you help me with this PR? CI is failing and I have no idea what’s going on.”*



# Musical interlude

 *Insert your favorite elevator music here* 

# ♪ Tou... ♪









**Changes requested** [Show all reviewers](#)  
1 review requesting changes by reviewers with write access. [Learn more about pull request reviews.](#)

**1 change requested** ▾

**1 pending reviewer** ▾

**Some checks were not successful** [Hide all checks](#)  
48 successful, 4 failing, 1 skipped, and 2 neutral checks

---


|   |  |                         |
|---|--|-------------------------|
| ✗ |  Quarkus CI / JVM Tests - JDK 17 (pull_request) Failing after 255m          | <a href="#">Details</a> |
| ✗ |  Quarkus CI / JVM Tests - JDK 21 (pull_request) Failing after 253m          | <a href="#">Details</a> |
| ✗ |  Quarkus CI / JVM Tests - JDK 17 Windows (pull_request) Failing after 269m  | <a href="#">Details</a> |
| ✓ |  Quarkus CI / Maven Tests - JDK 17 (pull_request) Successful in 59m         | <a href="#">Details</a> |
| ✓ |  Quarkus CI / Maven Tests - JDK 17 Windows (pull_request) Successful in 79m | <a href="#">Details</a> |
| ✓ |  Quarkus CI / Gradle Tests - JDK 17 (pull_request) Successful in 29m        | <a href="#">Details</a> |

**This branch is out-of-date with the base branch** [Update branch](#) ▾  
Merge the latest changes from `main` into this branch.  
This merge commit will be associated with guillaume.smet@gmail.com.

**Merging is blocked**

♪♪ ...dou... ♪♪

```
19447 at io.smallrye.mutiny.operators.uni.UniOnItemTransformToUni$UniOnItemTransformToUniProcessor.onItem(UniOnItemTransformToUni.java:57)
19448 at io.smallrye.mutiny.operators.uni.builders.UniCreateFromKnownItem$KnownItemSubscription.forward(UniCreateFromKnownItem.java:38)
19449 at io.smallrye.mutiny.operators.uni.builders.UniCreateFromKnownItem.subscribe(UniCreateFromKnownItem.java:23)
19450 at io.smallrye.mutiny.operators.AbstractUni.subscribe(AbstractUni.java:36)
19451 at io.smallrye.mutiny.operators.uni.UniOnItemTransformToUni.subscribe(UniOnItemTransformToUni.java:25)
19452 at io.smallrye.mutiny.operators.AbstractUni.subscribe(AbstractUni.java:36)
19453 at io.smallrye.mutiny.groups.UniSubscribe.withSubscriber(UniSubscribe.java:51)
19454 at io.quarkus.vertx.http.runtime.security.HttpSecurityRecorder$AuthenticationHandler$3.onItem(HttpSecurityRecorder.java:308)
19455 at io.quarkus.vertx.http.runtime.security.HttpSecurityRecorder$AuthenticationHandler$3.onItem(HttpSecurityRecorder.java:293)
19456 at io.smallrye.mutiny.operators.uni.UniMemoizeOp.forwardTo(UniMemoizeOp.java:123)
19457 at io.smallrye.mutiny.operators.uni.UniMemoizeOp.notifyAwaiters(UniMemoizeOp.java:135)
19458 at io.smallrye.mutiny.operators.uni.UniMemoizeOp.onItem(UniMemoizeOp.java:97)
19459 at io.smallrye.mutiny.operators.uni.UniOnItemTr
```

This step has been truncated due to its large size. Download the full logs from the  menu once the workflow run has completed.



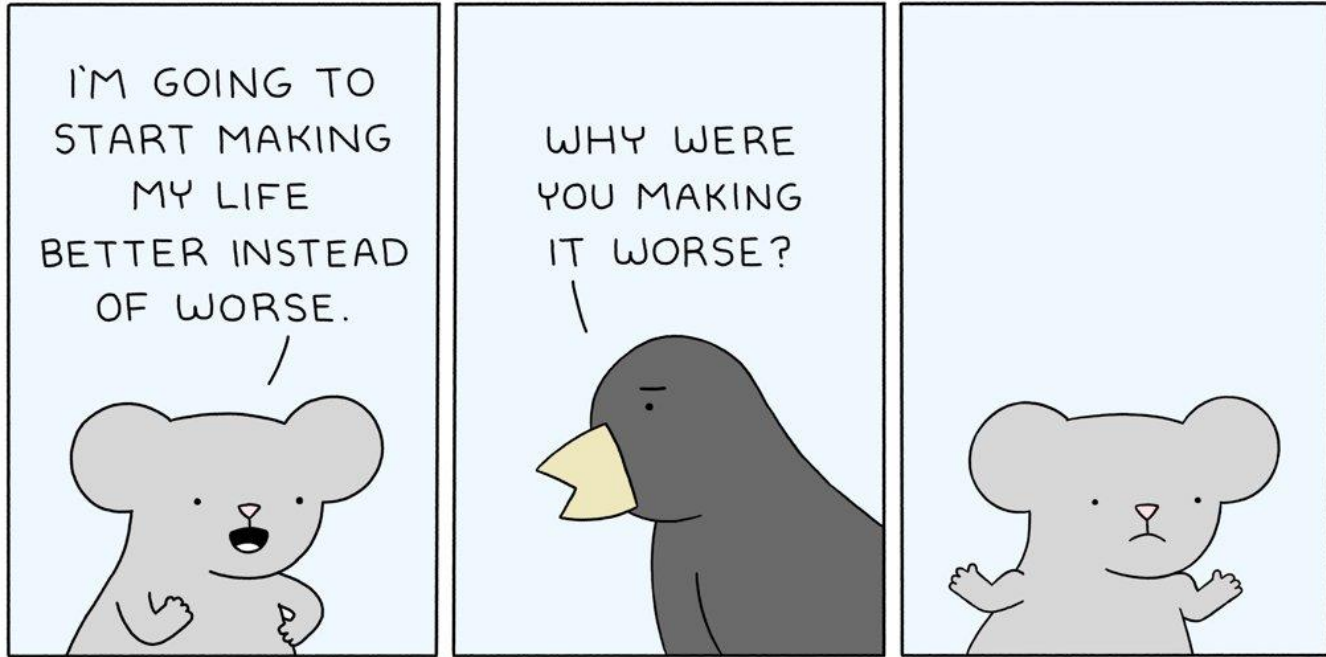
```
2024-09-11T22:29:12.2823464Z [INFO] -----
2024-09-11T22:29:12.2824162Z [INFO] BUILD FAILURE
2024-09-11T22:29:12.2824845Z [INFO] -----
2024-09-11T22:29:12.2825556Z [INFO] Total time: 04:10 h
2024-09-11T22:29:12.2826160Z [INFO] Finished at: 2024-09-11T22:29:12Z
2024-09-11T22:29:12.2826984Z [INFO] -----
2024-09-11T22:29:12.2980615Z [INFO] 11653 goals, 9587 executed, 2066 from cache, saving at least 2m 20s
2024-09-11T22:29:13.4305342Z [ERROR] Failed to execute goal org.apache.maven.plugins:maven-surefire-plugin:3.5.0:test (default-test) on project quarkus-rest-client: There are test failures.
2024-09-11T22:29:13.4307064Z [ERROR]
2024-09-11T22:29:13.4308801Z [ERROR] Please refer to /home/runner/work/quarkus/quarkus/extensions/resteasy-reactive/rest-client/runtime/target/surefire-reports for the individual test results.
2024-09-11T22:29:13.4311161Z [ERROR] Please refer to dump files (if any exist) [date].dump, [date]-jvmRun[N].dump and [date].dumpstream.
2024-09-11T22:29:13.4312273Z [ERROR] -> [Help 1]
2024-09-11T22:29:13.4314377Z org.apache.maven.lifecycle.LifecycleExecutionException: Failed to execute goal org.apache.maven.plugins:maven-surefire-plugin:3.5.0:test (default-test) on project
quarkus-rest-client: There are test failures.
2024-09-11T22:29:13.4316121Z
2024-09-11T22:29:13.4317671Z Please refer to /home/runner/work/quarkus/quarkus/extensions/resteasy-reactive/rest-client/runtime/target/surefire-reports for the individual test results.
2024-09-11T22:29:13.4319684Z Please refer to dump files (if any exist) [date].dump, [date]-jvmRun[N].dump and [date].dumpstream.
2024-09-11T22:29:13.4321088Z at org.apache.maven.lifecycle.internal.MojoExecutor.doExecute2 (MojoExecutor.java:333)
2024-09-11T22:29:13.4322812Z at org.apache.maven.lifecycle.internal.MojoExecutor.doExecute (MojoExecutor.java:316)
2024-09-11T22:29:13.4324192Z at org.apache.maven.lifecycle.internal.MojoExecutor.execute (MojoExecutor.java:212)
2024-09-11T22:29:13.4325567Z at org.apache.maven.lifecycle.internal.MojoExecutor.execute (MojoExecutor.java:174)
2024-09-11T22:29:13.4326959Z at org.apache.maven.lifecycle.internal.MojoExecutor.access$000 (MojoExecutor.java:75)
2024-09-11T22:29:13.4328340Z at org.apache.maven.lifecycle.internal.MojoExecutor$1.run (MojoExecutor.java:162)
2024-09-11T22:29:13.4329890Z at org.apache.maven.plugin.DefaultMojoExecutionStrategy.execute (DefaultMojoExecutionStrategy.java:39)
2024-09-11T22:29:13.4331479Z at org.apache.maven.lifecycle.internal.MojoExecutor.execute (MojoExecutor.java:159)
2024-09-11T22:29:13.4333123Z at org.apache.maven.lifecycle.internal.LifecycleModuleBuilder.buildProject (LifecycleModuleBuilder.java:105)
2024-09-11T22:29:13.4335031Z at org.apache.maven.lifecycle.internal.LifecycleModuleBuilder.buildProject (LifecycleModuleBuilder.java:73)
2024-09-11T22:29:13.4337069Z at org.apache.maven.lifecycle.internal.builder.singlethreaded.SingleThreadedBuilder.build (SingleThreadedBuilder.java:53)
2024-09-11T22:29:13.4339369Z at org.apache.maven.lifecycle.internal.LifecycleStarter.execute (LifecycleStarter.java:118)
2024-09-11T22:29:13.4340730Z at org.apache.maven.DefaultMaven.doExecute (DefaultMaven.java:261)
2024-09-11T22:29:13.4341757Z at org.apache.maven.DefaultMaven.doExecute (DefaultMaven.java:173)
2024-09-11T22:29:13.4342795Z at org.apache.maven.DefaultMaven.execute (DefaultMaven.java:101)
2024-09-11T22:29:13.4343800Z at org.apache.maven.cli.MavenCli.execute (MavenCli.java:906)
```



```
-----
2024-09-11T19:18:25.5503476Z [INFO] -----
2024-09-11T19:18:25.5504098Z [INFO] T E S T S
2024-09-11T19:18:25.5504716Z [INFO] -----
2024-09-11T19:18:26.1892376Z [INFO] Running io.quarkus.rest.client.reactive.runtime.RestClientCDIDelegateBuilderTest
2024-09-11T19:18:26.6933356Z OpenJDK 64-Bit Server VM warning: Sharing is only supported for boot loader classes because bootstrap classpath has been appended
2024-09-11T19:18:27.5337696Z [ERROR] Tests run: 2, Failures: 1, Errors: 0, Skipped: 0, Time elapsed: 1.314 s <<< FAILURE! -- in
io.quarkus.rest.client.reactive.runtime.RestClientCDIDelegateBuilderTest
2024-09-11T19:18:27.5345363Z [ERROR] io.quarkus.rest.client.reactive.runtime.RestClientCDIDelegateBuilderTest.testClientSpecificConfigs -- Time elapsed: 0.070 s <<< FAILURE!
2024-09-11T19:18:27.5347556Z Argument(s) are different! Wanted:
2024-09-11T19:18:27.5348494Z quarkusRestClientBuilderImpl.baseUri(
2024-09-11T19:18:27.5349320Z     http://localhost:8080
2024-09-11T19:18:27.5349989Z );
2024-09-11T19:18:27.5351600Z -> at io.quarkus.rest.client.reactive.runtime.QuarkusRestClientBuilderImpl.baseUri(QuarkusRestClientBuilderImpl.java:42)
2024-09-11T19:18:27.5353274Z Actual invocations have different arguments:
2024-09-11T19:18:27.5354197Z quarkusRestClientBuilderImpl.baseUri(
2024-09-11T19:18:27.5355009Z     http://localhost
2024-09-11T19:18:27.5355455Z );
2024-09-11T19:18:27.5356915Z -> at io.quarkus.rest.client.reactive.runtime.RestClientCDIDelegateBuilder.configureBaseUrl(RestClientCDIDelegateBuilder.java:426)
2024-09-11T19:18:27.5358510Z quarkusRestClientBuilderImpl.connectTimeout(
2024-09-11T19:18:27.5440299Z     100L,
2024-09-11T19:18:27.5444307Z     MILLISECONDS
2024-09-11T19:18:27.5448227Z );
2024-09-11T19:18:27.5453151Z -> at io.quarkus.rest.client.reactive.runtime.RestClientCDIDelegateBuilder.configureTimeouts(RestClientCDIDelegateBuilder.java:394)
2024-09-11T19:18:27.5457967Z quarkusRestClientBuilderImpl.readTimeout(
2024-09-11T19:18:27.5462105Z     101L,
2024-09-11T19:18:27.5465542Z     MILLISECONDS
2024-09-11T19:18:27.5468899Z );
2024-09-11T19:18:27.5473329Z -> at io.quarkus.rest.client.reactive.runtime.RestClientCDIDelegateBuilder.configureTimeouts(RestClientCDIDelegateBuilder.java:400)
2024-09-11T19:18:27.5477827Z quarkusRestClientBuilderImpl.register(
2024-09-11T19:18:27.5481949Z     class io.quarkus.rest.client.reactive.runtime.RestClientCDIDelegateBuilderTest$MyResponseFilter1
2024-09-11T19:18:27.5485995Z );
2024-09-11T19:18:27.5490306Z -> at io.quarkus.rest.client.reactive.runtime.QuarkusRestClientBuilderImpl.register(QuarkusRestClientBuilderImpl.java:26)
```

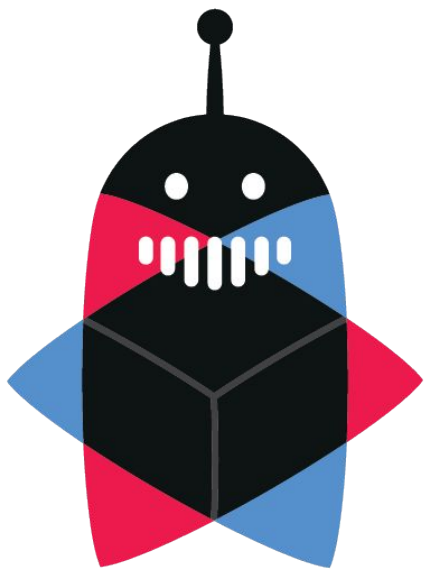
*It's all about scale*

# Bad, context switches, bad.



*Poorly drawn lines by Reza Farazmand*

# You don't need AI to be smart



Quarkus GitHub App

&

Quarkus GitHub Action

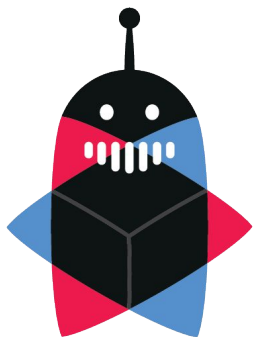
Automate everything GitHub  
No boilerplate  
Comes with Quarkus Dev Joy



# GitHub App?

Send payloads on event  
(issue, pull\_request, workflow\_run...)

Register your GitHub App



Check signature



REST API + GraphQL API



**Richard Startin**

@richardstartin



Would it be disingenuous to automatically close bugs related to OSGi with “could not reproduce?”

1:15 PM · May 31, 2022



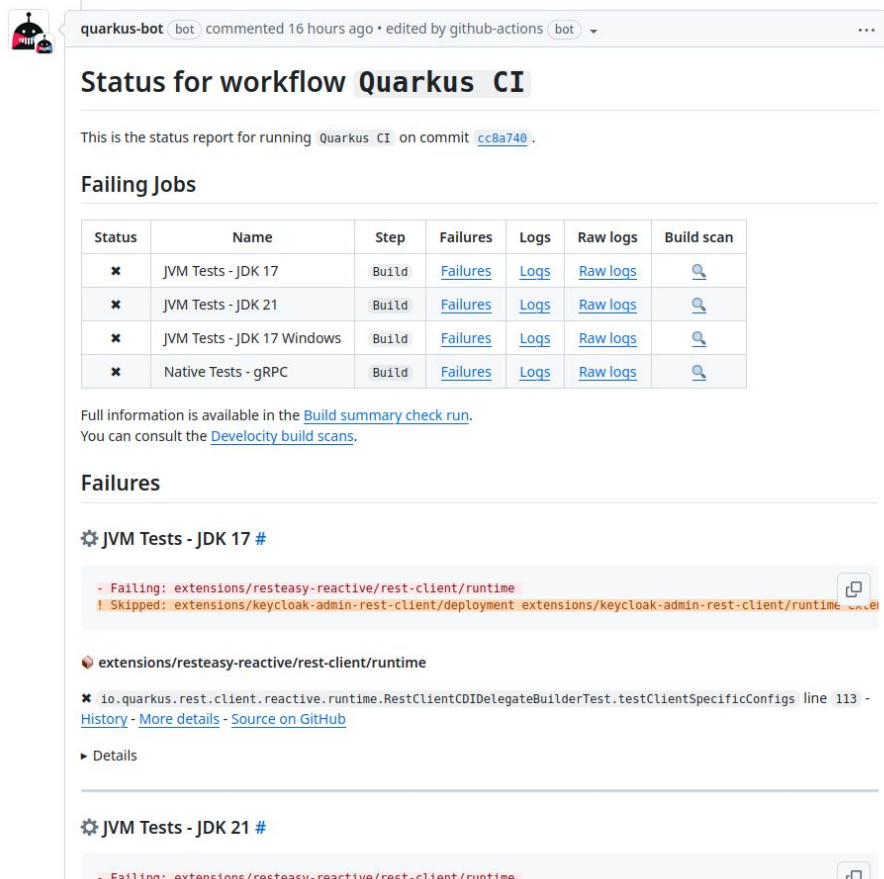
*Let's code!*

*Easy enough?*

# Let's be smart

*Full overview of your CI run*

*With some intelligence in it!*



quarkus-bot bot commented 16 hours ago · edited by github-actions bot

## Status for workflow Quarkus CI

This is the status report for running Quarkus CI on commit [cc8a740](#).

### Failing Jobs

| Status | Name                       | Step  | Failures                 | Logs                 | Raw logs                 | Build scan        |
|--------|----------------------------|-------|--------------------------|----------------------|--------------------------|-------------------|
| ✘      | JVM Tests - JDK 17         | Build | <a href="#">Failures</a> | <a href="#">Logs</a> | <a href="#">Raw logs</a> | <a href="#">🔍</a> |
| ✘      | JVM Tests - JDK 21         | Build | <a href="#">Failures</a> | <a href="#">Logs</a> | <a href="#">Raw logs</a> | <a href="#">🔍</a> |
| ✘      | JVM Tests - JDK 17 Windows | Build | <a href="#">Failures</a> | <a href="#">Logs</a> | <a href="#">Raw logs</a> | <a href="#">🔍</a> |
| ✘      | Native Tests - gRPC        | Build | <a href="#">Failures</a> | <a href="#">Logs</a> | <a href="#">Raw logs</a> | <a href="#">🔍</a> |

Full information is available in the [Build summary check run](#).  
You can consult the [Develocity build scans](#).

### Failures

#### ⚙️ JVM Tests - JDK 17 #

```
- Failing: extensions/resteasy-reactive/rest-client/runtime  
! Skipped: extensions/keycloak-admin-rest-client/deployment extensions/keycloak-admin-rest-client/runtime
```

extensions/resteasy-reactive/rest-client/runtime

✘ io.quarkus.rest.client.reactive.runtime.RestClientCDIDelegateBuilderTest.testClientSpecificConfigs line 113 - [History](#) - [More details](#) - [Source on GitHub](#)

► Details

---

#### ⚙️ JVM Tests - JDK 21 #

```
- Failing: extensions/resteasy-reactive/rest-client/runtime
```

# Quarkus GitHub App

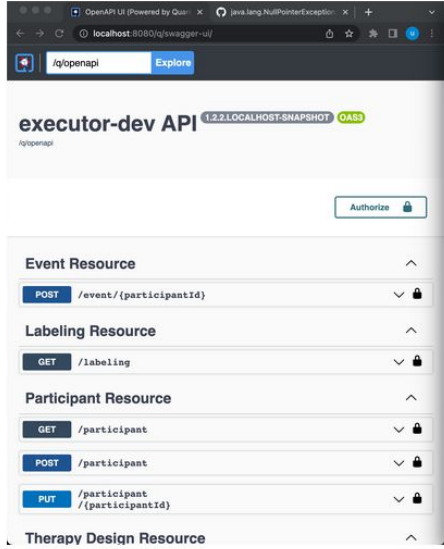
- *Quarkus extension*
  - *Develop GitHub Apps in Java*
  - *Developer joy (live reload, Replay UI)*
- *Stable and fully documented - in production for 3 years*
- *Used by Quarkus, Hibernate, Keycloak, WildFly, the Commonhaus Foundation...*
- *Supports GitHub Enterprise too*
- *Be creative, create your own bot!*

*Also exists for GitHub Actions*

# Users can be smarter...

commented on Feb 13, 2023 Author ...

reproducer:



```
executor-dev API
4.2.2 LOCALHOST-SNAPSHOT 0.4.5
/api/openapi

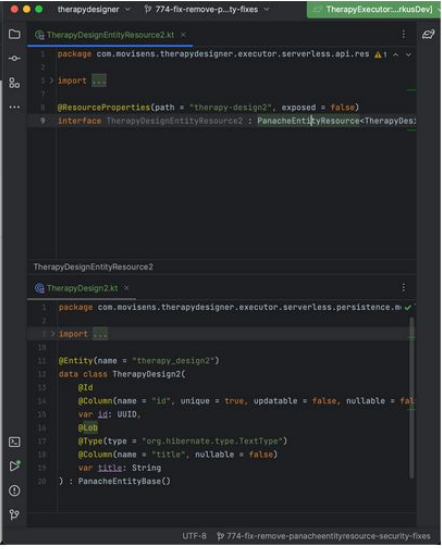
Authorize

Event Resource
POST /event/{participantId}

Labeling Resource
GET /labeling


Participant Resource
GET /participant
POST /participant
PUT /participant/{participantId}

Therapy Design Resource
```



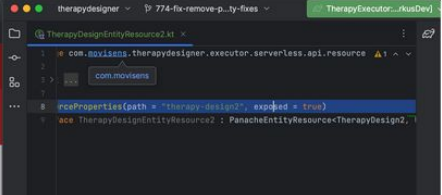
```
TherapyDesignEntityResource2.kt
package com.movisens.therapydesigner.executor.serverless.api.res
import javax.annotation.ResourceProperties
@ResourceProperties(path = "therapy-design2", exposed = false)
interface TherapyDesignEntityResource2 : PanacheEntityResource<TherapyDesign2>()

TherapyDesign2.kt
package com.movisens.therapydesigner.executor.serverless.persistence.m
import javax.persistence.Entity
@Entity(name = "therapy_design2")
data class TherapyDesign2(
    @ID
    @Column(name = "id", unique = true, updatable = false, nullable = false)
    var id: UUID,
    @Lob
    @Type(type = "org.hibernate.type.TextType")
    @Column(name = "title", nullable = false)
    var title: String
) : PanacheEntityBase()
```



```
Error restarting Quarkus
java.lang.RuntimeException: io.quarkus.builder.BuildException:
Build failure: Build failed due to errors

The stacktrace below has been reversed to show the root cause first. Click Here
to see the original stacktrace
```



```
TherapyDesignEntityResource2.kt
package com.movisens.therapydesigner.executor.serverless.api.resource
import javax.annotation.ResourceProperties
@ResourceProperties(path = "therapy-design2", exposed = true)
interface TherapyDesignEntityResource2 : PanacheEntityResource<TherapyDesign2>()
```

# *Let's get smarter*

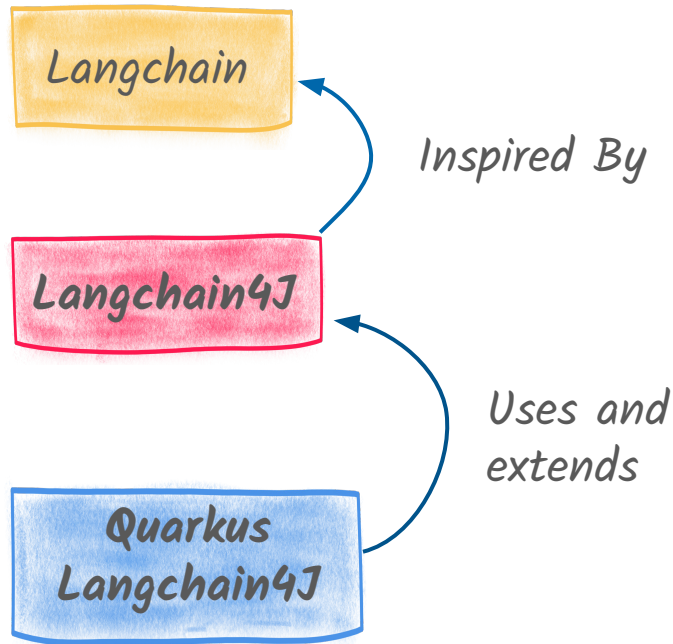


## *Quarkus LangChain4j*

*LLM integration for Quarkus  
Brings Developer Joy to LLM consumption*



# LangChain / Langchain4J / Quarkus Langchain4J

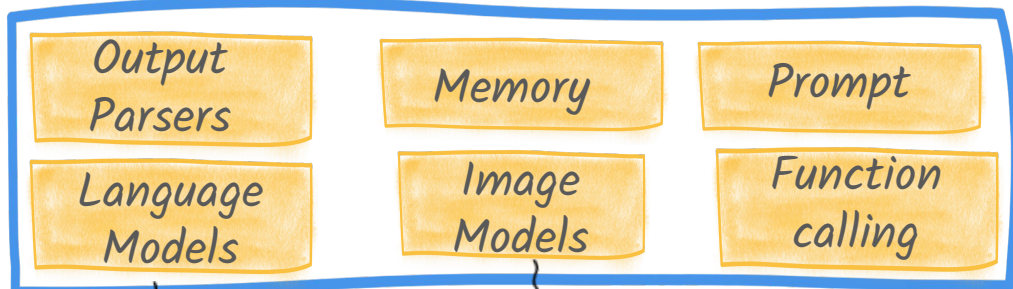


# Langchain4J

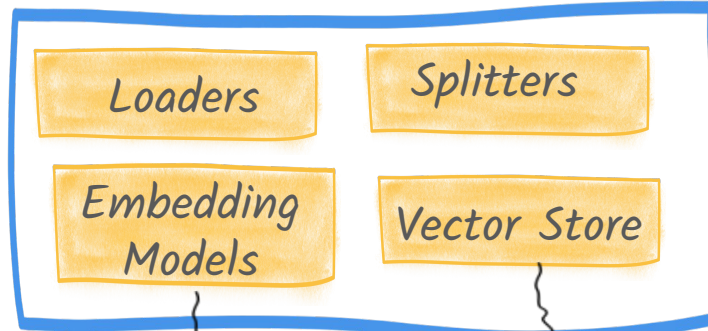
<https://github.com/langchain4j/langchain4j>

AI Service

## Building blocks

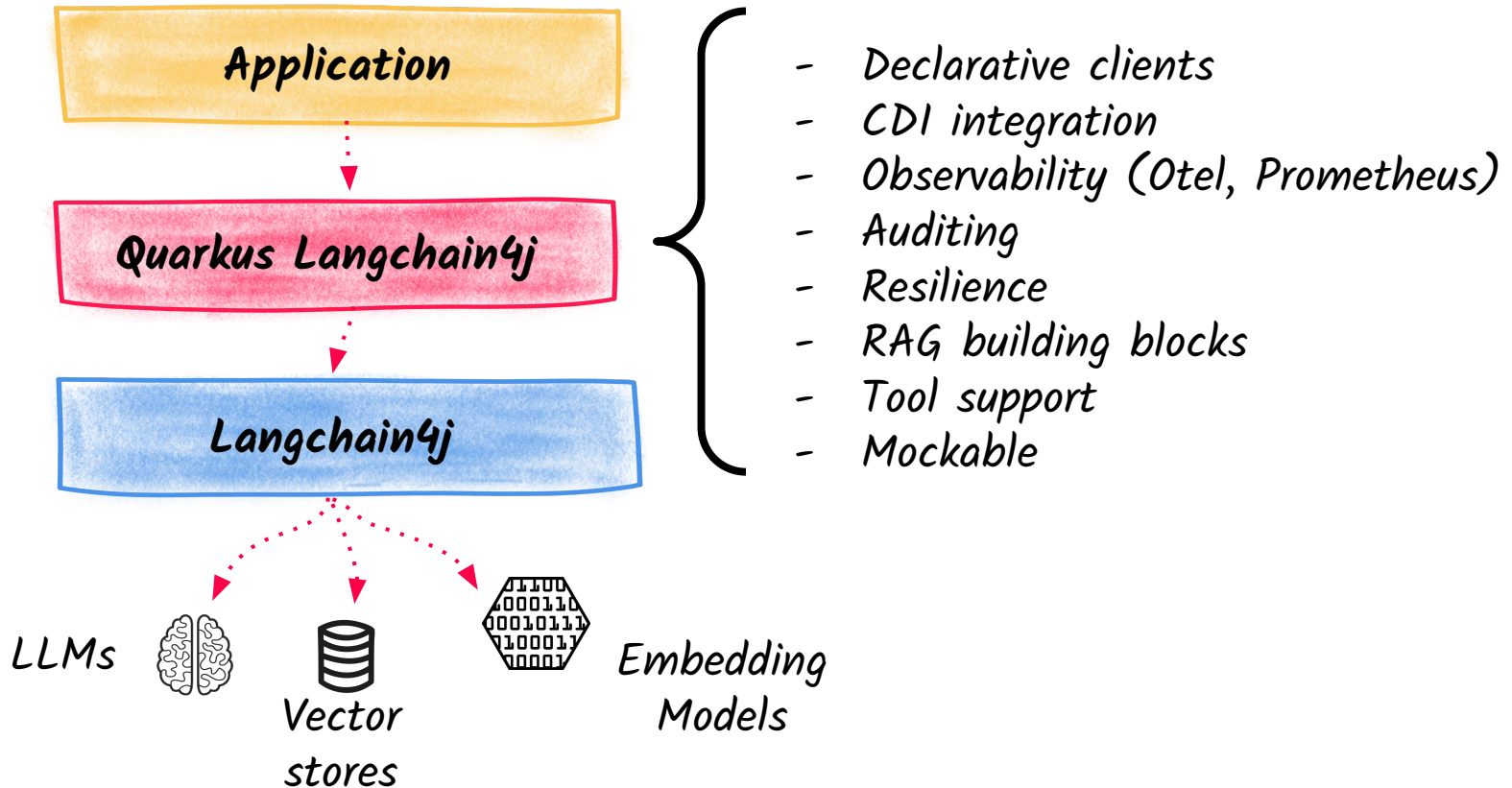


## RAG



# Quarkus Langchain4J

<https://docs.quarkiverse.io/quarkus-langchain4j>



*Let's code!*

# Automation FTW!

*Fluidify your project*

*Less context switches*

*Start small and enjoy!*

# AI is a tool

*It won't magically solve all problems*

*It can address a whole new series of problems that were previously close to unsolvable for the average developer*

*Choose wisely*



# QUARKUS

- 
-  <https://quarkus.io>
  -  <https://quarkusio.zulipchat.com>
  -  <https://youtube.com/quarkusio>
  -  @quarkusio



Code



Slides

## *Other Quarkus & LangChain4j sessions*

- **Pushing LLMs over the Edge: Exploring the Limits of the Possible** - Wednesday, 16:40, Room 6
- **Quarkus Community BOF** - Wednesday, 19:00, BOF 2
- **Panel Discussion: LangChain4j, a year later.** - Thursday, 11:50, Room 10
- **Crafting Intelligent Applications with Quarkus/LangChain4j** - Thursday, 12:50, Room 5
- **Introduction to Quarkus Security** - Thursday, 15:00, Room 9
- **Zero Waste, Radical Magic, and Italian Graft – Quarkus Efficiency Secrets** - Thursday, 17:40, Room 6



## Learn more

- **Quarkus LangChain4j**

- <https://github.com/quarkiverse/quarkus-langchain4j/>
- <https://docs.quarkiverse.io/quarkus-langchain4j/dev/index.html>

- **Quarkus GitHub App**

- <https://github.com/quarkiverse/quarkus-github-app/>
- <https://docs.quarkiverse.io/quarkus-github-app/dev/index.html>

- **Quarkus GitHub Action**

- <https://github.com/quarkiverse/quarkus-github-action/>
- <https://docs.quarkiverse.io/quarkus-github-action/dev/index.html>