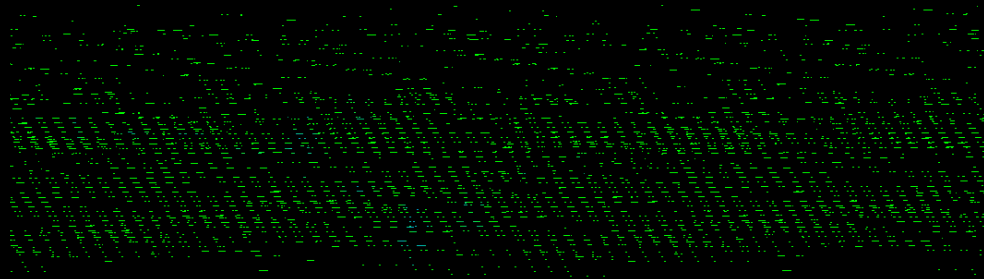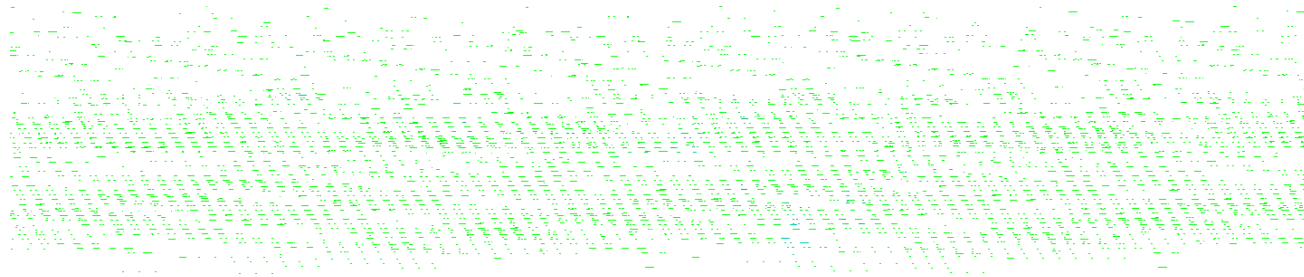# Full Stack Web Entwicklung mit Vaadin

Verbinde Front- und Backends mit Java

Sebastian Kühnau
Vaadin Enthusiast

What is Vaadin?

and what is it good for?

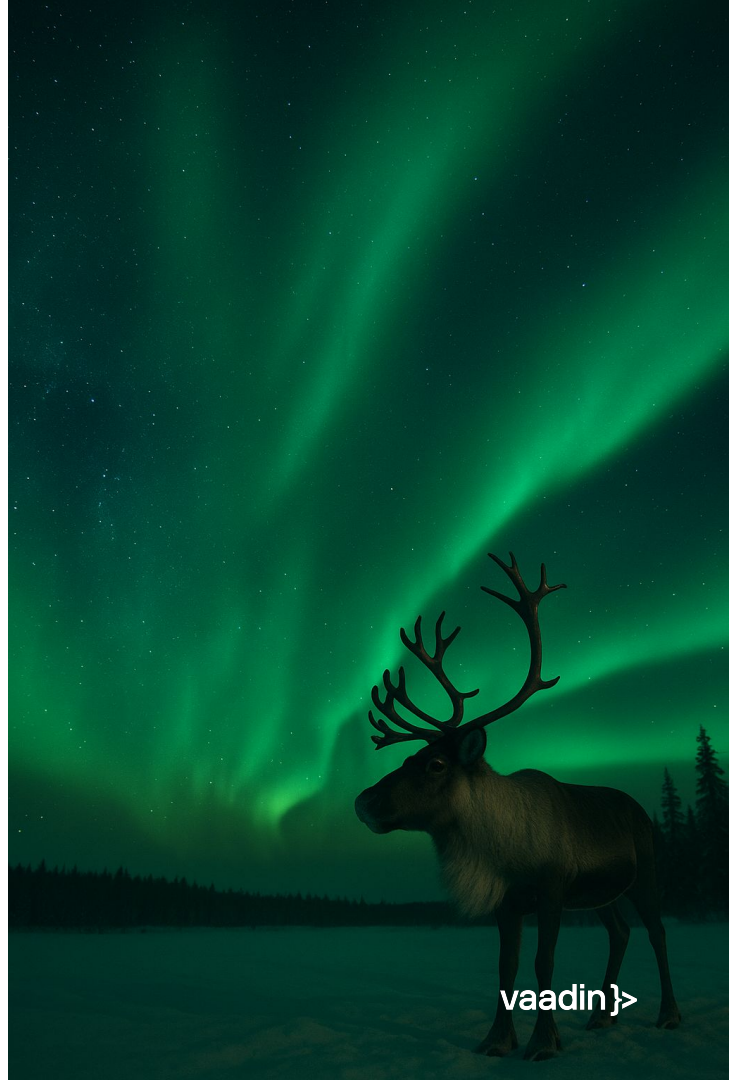vaadin }>

Vaadin

Finnish word: "female reindeer"

Created in Turku since 2000

Bringing `<web applications/>` to the `{Java}` world.

Who is talking?

Sebastian Kühnau

>20y in web- & java development

~10y at Vaadin

    several technical roles

    now developer advocate

Off-work mostly outdoors;

01

Vaadin
Birds-Eye View

How is it different?

Who's using it?

How does it work?

02 Live Demo
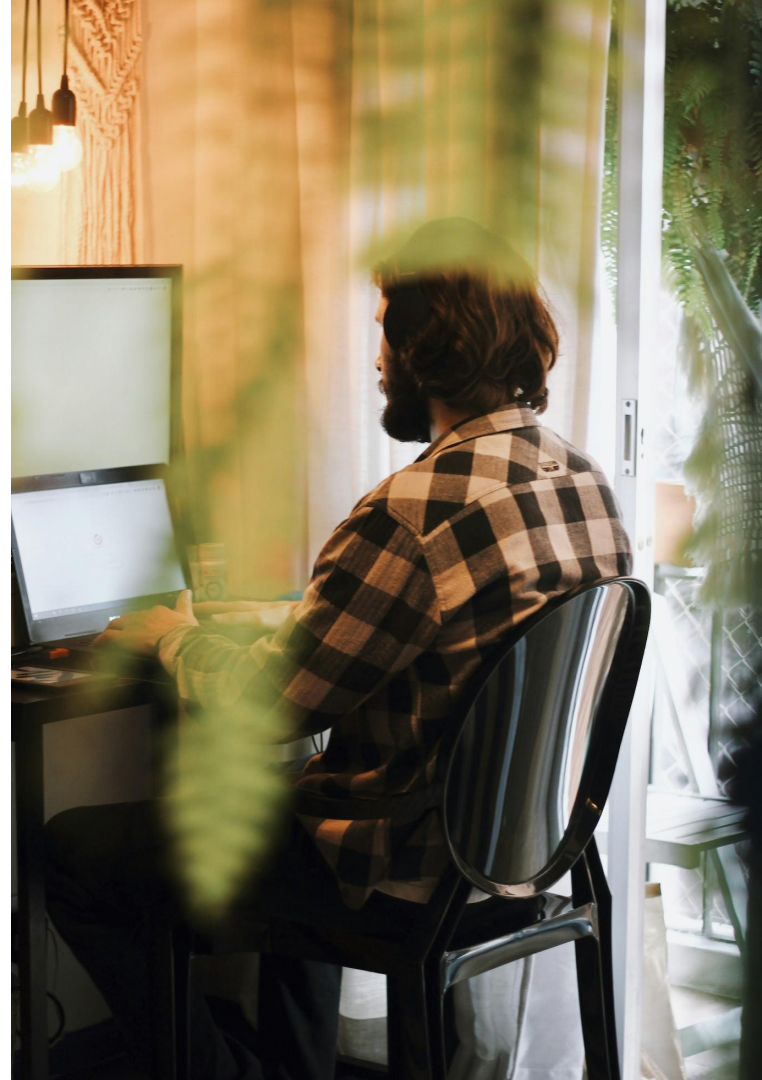
vaadin }>

Why WebDev is hard with Java?

- Outdated tech or switching stacks

- Modern web frameworks require a different language and toolchain

- Teams work in silos – backend vs. frontend, Java vs. JS

➡️ **Fast and pragmatic? Not really.**

Full Stack with Vaadin

Comes with **+50 ready-to-use UI- components** (Labels, Button, Grids, Charts)

Fully integrated in **Java Ecosystem** - Works with Spring Boot, Maven, JUnit.

Java only - no technology gap and no need of HTML, CSS or JavaScript*****

Includes **modern web technologies** like NPM, Vite & WebComponents

Secure by Default – Server-side logic, state management, and data binding included.

Easy Deployment – Ship as jar or war, just like any Java app.

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Vaadin Flow

```java
@Route(value = "hello-world")
public class HelloWorldView extends HorizontalLayout {

    public HelloWorldView() {
        var name = new TextField("Your name");
        var sayHello = new Button("Say hello", event ->
            Notification.show("Hello " + name.getValue()));

        add(name, sayHello);
        setMargin(true);
    }
}
```

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Building Web Apps with Java only

Vaadin Flow

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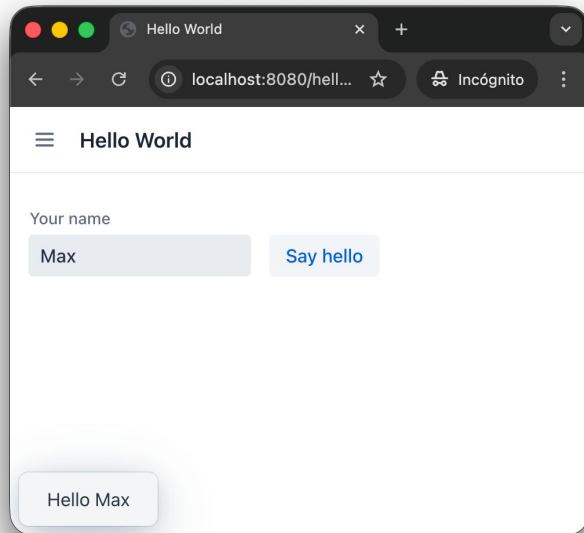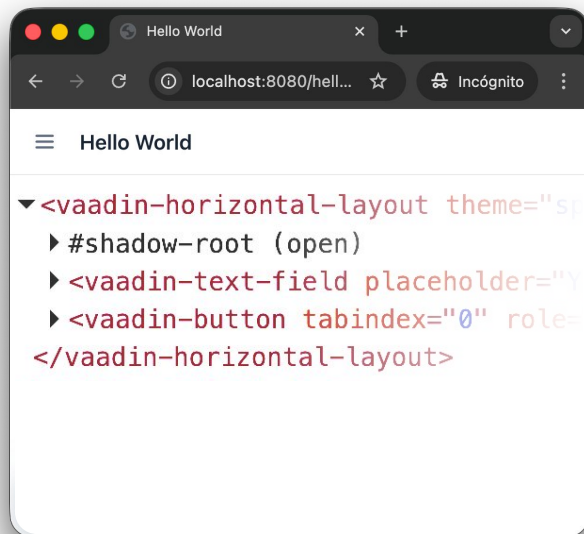
Hello World

localhost:8080/hell...   Incógnito

☰ Hello World

▼<vaadin-horizontal-layout theme="s
  ▶ #shadow-root (open)
  ▶ <vaadin-text-field placeholder="
  ▶ <vaadin-button tabindex="0" role=
</vaadin-horizontal-layout>

vaadin]}>

Get Started in a few steps

```xml
<dependency>
    <groupId>com.vaadin</groupId>
    <artifactId>vaadin-core</artifactId>
</dependency>

...

<plugin>
    <groupId>com.vaadin</groupId>
    <artifactId>vaadin-maven-plugin</artifactId>
    <executions>
        <execution>
            <goals>
                <goal>prepare-frontend</goal>
            </goals>
        </execution>
    </executions>
</plugin>
```

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Get Started in a few steps

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        <execution>
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            </goals>
        </execution>
    </executions>
</plugin>
```

Framework   **Base components**   **Dev tools**

- *prepare necessary meta info*
- *build optimized frontend bundle*
  (optional in DevMode)

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Architecture

```html
▼<vaadin-horizontal-layout theme="spacing" has-s
  ▶#shadow-root (open)
  ▶<vaadin-text-field placeholder="Your name">⋯
  ▶<vaadin-button tabindex="0" role="button" last
</vaadin-horizontal-layout>
```
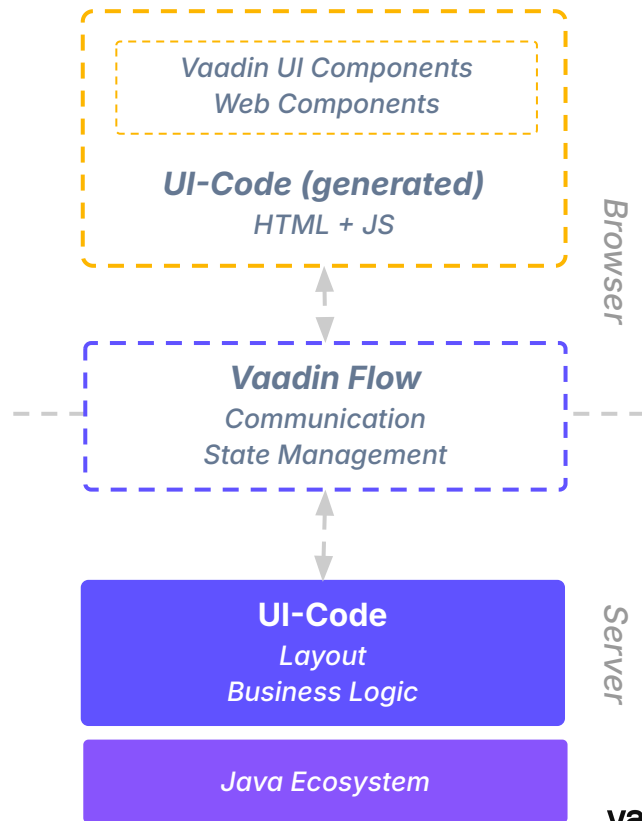
```java
var name = new TextField("Your name");

var button = new Button("Say hello", event ->
    Notification.show("Hello " + name.getValue()));

add(new HorizontalLayout(name, button));
```

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Vaadin from the bird's eye view

Architecture

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```

Vaadin UI Components
Web Components

UI-Code (generated)
HTML + JS

Browser

Vaadin Flow
Communication
State Management

UI-Code
Layout
Business Logic

Server

Java Ecosystem

vaadin }>

Architecture

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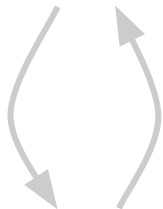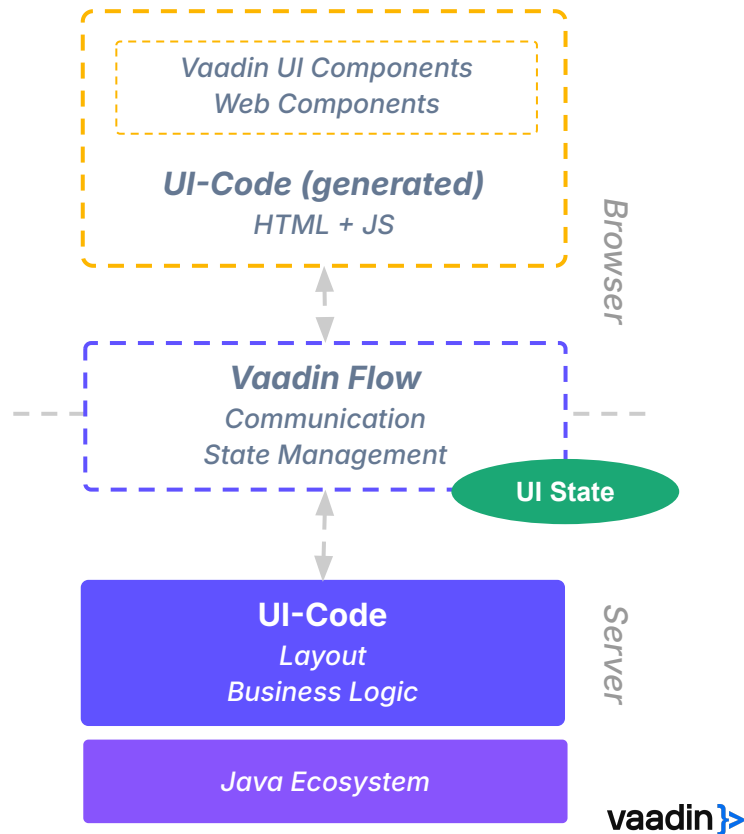
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vaadin }>

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  ▶<vaadin-button tabindex="0" role="button" last
 </vaadin-horizontal-layout>
```

```
[{                          {
  "type": "event",            "node": 24,
  "node": 5,                  "type": "put",
  "event": "click",           "key": "tag",
  "data": {...}               "feat": 0,
}]                            "value": "vaadin-notification"
                           },
```

RPC

```java
var name = new TextField("Your name");
var button = new Button("Say hello", event ->
    Notification.show("Hello " + name.getValue()));
add(new HorizontalLayout(name, button));
```
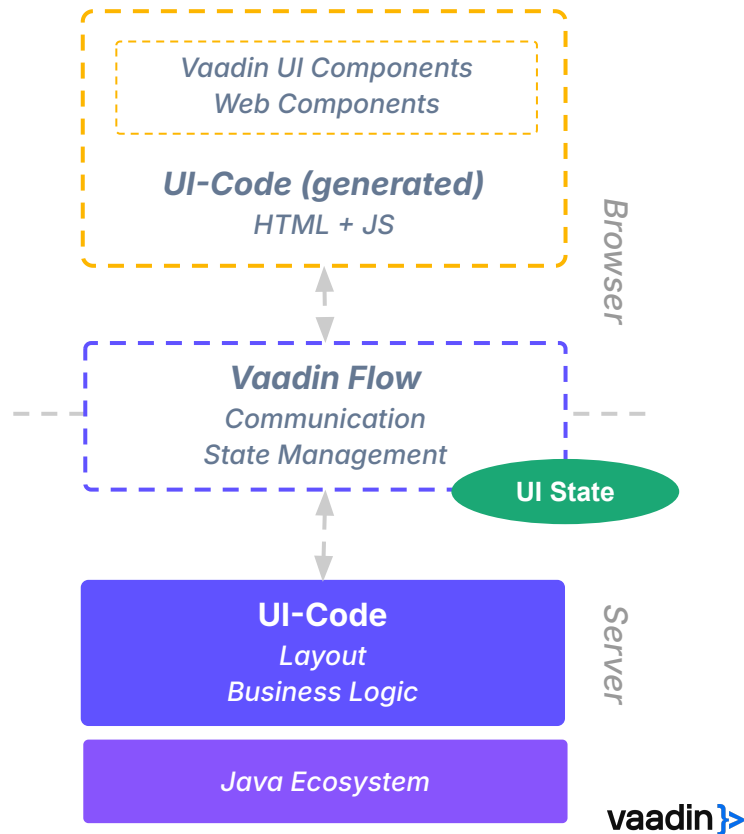
Vaadin UI Components
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Java Ecosystem

vaadin }▷

Fast and secure by default

Architecture

```
▼<vaadin-horizontal-layout theme="spacing" has-s
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  ▶ <vaadin-button tabindex="0" role="button" las
  </vaadin-horizontal-layout>
```

HTTPS Post
*with clientId &
csrfToken*

RPC
🔒

JSON Response
*with clientId +1,
syncId + 1 & csrfToken*

```java
var name = new TextField("Your name");

var button = new Button("Say hello", event ->
    Notification.show("Hello " + name.getValue()));

add(new HorizontalLayout(name, button));
```
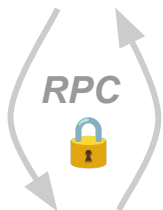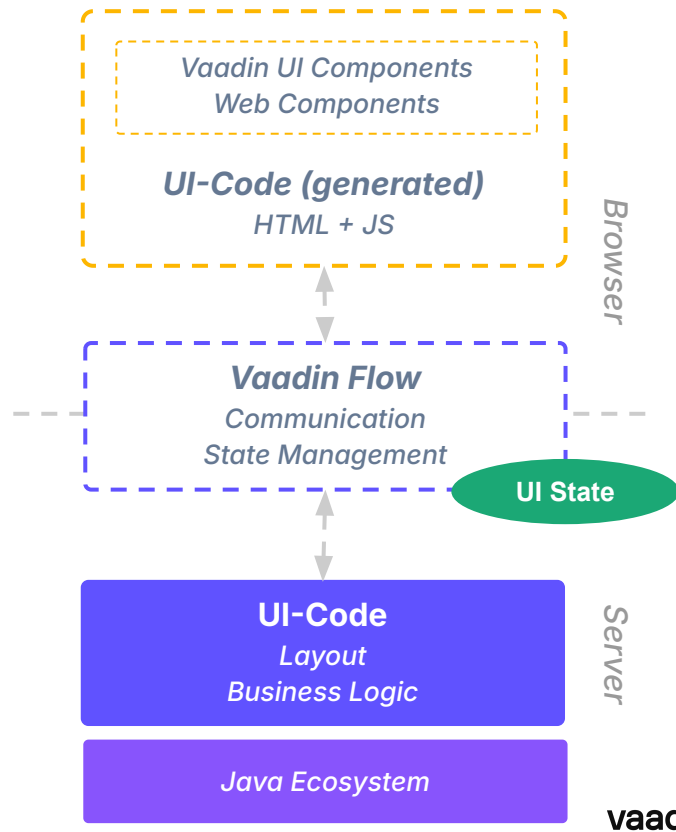
Browser

*Vaadin UI Components
Web Components*

UI-Code (generated)
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Vaadin Flow
*Communication
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UI State

Server

UI-Code
*Layout
Business Logic*

Java Ecosystem

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Vaadin

Platform & Company

Core Java Framework
High-quality set of UI components
Collaboration Kit
Figma templates
3rd-party component directory

Additional components (Charts, Maps, Dashboard, ...)
Tools (Copilot, Testbench, ...)
Kits for SSO, Observability, Kubernetes, ...
Swing & Legacy Modernization (Automation Tooling, Components)
Support & Development Services
Commercial Maintenance

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We've built business web applications for many verticals since the year 2000.

81%

Of Fortune
500 Companies
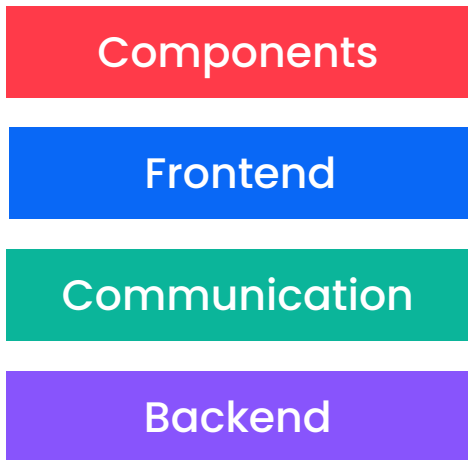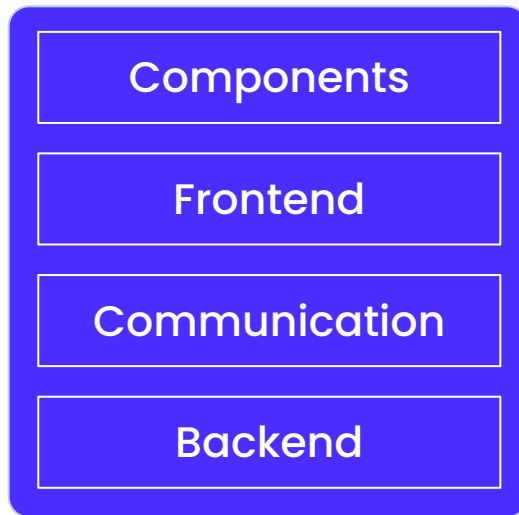
+25y

Years of
Experience

+200k

Developers
worldwide

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DIY-Stack

Full-Stack

Components

Frontend

Communication

Backend

Components

Frontend

Communication

Backend

Control

Productivity

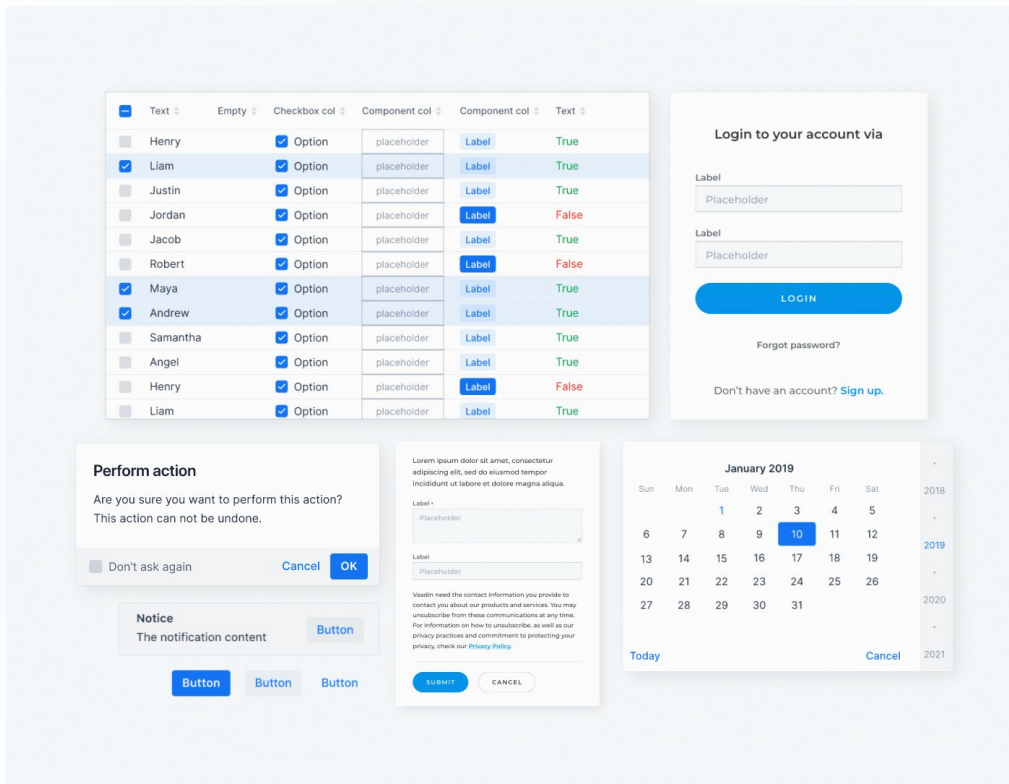vaadin }>

56 Components

- Optimised for desktop & mobile
- Themable & Accessible
- Based on Web Components
- Common Architecture
- Framework agnostic

+ +2000 components in
vaadin.com/directory

+ and you can also integrate
3rd party components

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Frontend, Backend & Config Included

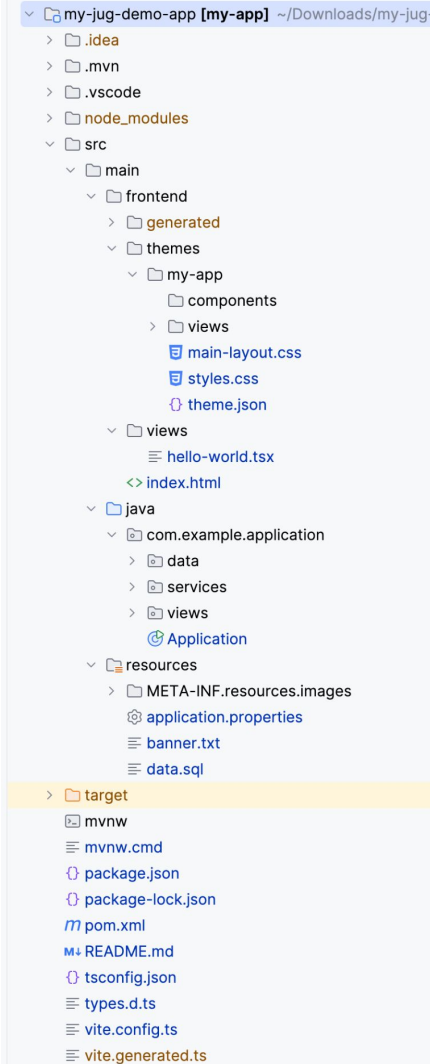# Project structure

src/main/java for Java sources

pom.xml for Java Dependencies and Maven Plugins

src/main/frontend for client side resources, e.g. JavaScript, TypeScript, HTML, CSS files

node_modules, package.json, package-lock.json for npm *(only after installing individual web components)*

vite.config.ts auto generated file for Vite, frontend build tooling

```
my-jug-demo-app [my-app]  ~/Downloads/my-jug-
  .idea
  .mvn
  .vscode
  node_modules
  src
    main
      frontend
        generated
        themes
          my-app
            components
            views
            main-layout.css
            styles.css
            theme.json
        views
          hello-world.tsx
          index.html
      java
        com.example.application
          data
          services
          views
          Application
      resources
        META-INF.resources.images
        application.properties
        banner.txt
        data.sql
  target
  mvnw
  mvnw.cmd
  package.json
  package-lock.json
  pom.xml
  README.md
  tsconfig.json
  types.d.ts
  vite.config.ts
  vite.generated.ts
```

Supported Technologies

- Java 17+, Maven 3.5+, Gradle 7.3+
- Node 18+
- Spring Boot 3.0+
- Evergreen Browsers + Safari 15
- TC 10.1, Jetty 12, Payara 6, WF 27, JBoss 8.0
- Unsupported Karaf & OSGi

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Vaadin 25

- **Java 21 & Spring Boot 4**
- **New Aura theme + CSS base styles** with **official Tailwind support**
- **Enhanced components** (fully Lit-based components, TreeGrid flat mode + performance, Map clustering, ComboBox label generator, markdown tooltips, Native HTML popover API)
- **Reduced frontend bundle size** → faster initial load
- **Jackson 3 + Java DTO support**
- **Deprecated/removed:** Polymer, Material theme, Vaadin Designer

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Community

- Focus in good Developer Experience

- Open source community with +200k members

- Support via vaadin.com/forum, GitHub and StackOverflow

- Meetups, Conferences and other Events or even more

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How to start?

- start.vaadin.com to create your own Vaadin Project

- start.spring.io/ add Vaadin Dependency

  and create a Spring based Project

- **Starter-** & **Skeleton**-projects on github.com/vaadin
  - Spring, CDI, Gradle, Quarkus, Plain

- Tutorial on vaadin.com/start

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Get started with Vaadin

Slides
Demo Project

seb@vaadin.com

github.com/SebastianKu
ehnau/vaadin-jug-demo/
tree/2025-11-JUGGR

Meet us at
Vaadin Create 2026
in Barcelona
Oct 27-28, 2026

vaadin.com/vaadin-
create-2026

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Kiitos paljon!

Feel free to reach out

seb@vaadin.com

x.com/seb_vaadin

linkedin.com (Sebastian Kuehnau 👀)

vaadin.com/forum

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