

# Flutter for Web

## An Introduction

Patrick Buchholz, Leipzig, 07.02.2023



---

# Patrick Buchholz

About me

- since January 2023– Flutter Developer at Appsfactory
- 2020–2022: Flutter & Angular Developer at EASY Software AG
- Before that Freelancing, Working Student for Android & iOS







What is it?





---

# What is Flutter Web

- Stable since March 2021
- Device target for Flutter
- Good for single page Web apps with a lot of UI and animations
- DOM or Canvas, WebAssembly (in process)
- Dart to JS compiler
- Support for PWAs
- Single Page Apps
- Hot Restart, no Hot Reload (not yet)









---

# Why Flutter Web

- Easy accessible you just need an URL
- Share existing codebase from mobile apps
- Quick for prototyping



# Advantages / Disadvantages

- + Cross platform, reuse business logic, components of mobile
- + Good for interactive single-page apps with a lot of UI and animations
- + Different design languages are supported out of the box (Cupertino, Material), others can be use via packages (fluent\_ui, macos\_ui)
- + PWA support
- + Can be integrated in existing websites
- Bad for static content
  - Initial download too big, initial loading of website takes too long
- No hot reload
- Not SEO friendly



---

# Show me an example

Rive - <https://editor.rive.app/>



Rive



Introducing  
the new Rive





---

# Show me more examples

- Google Classroom - <https://classroom.google.com/>
- FlutterFlow - <https://youtu.be/5j82wxzwFyl>
  - <https://flutterflow.io/>
- Flutter Plasma - <https://flutterplasma.dev/>
  - <https://github.com/felixblaschke/flutterplasma>
- Flutter Gallery
  - <https://gallery.flutter.dev/#/>
- Material 3 Demo
  - <https://flutter-experimental-m3-demo.web.app/#/>
- JS Interop Demo
  - <https://flutter-forward-demos.web.app/#/>





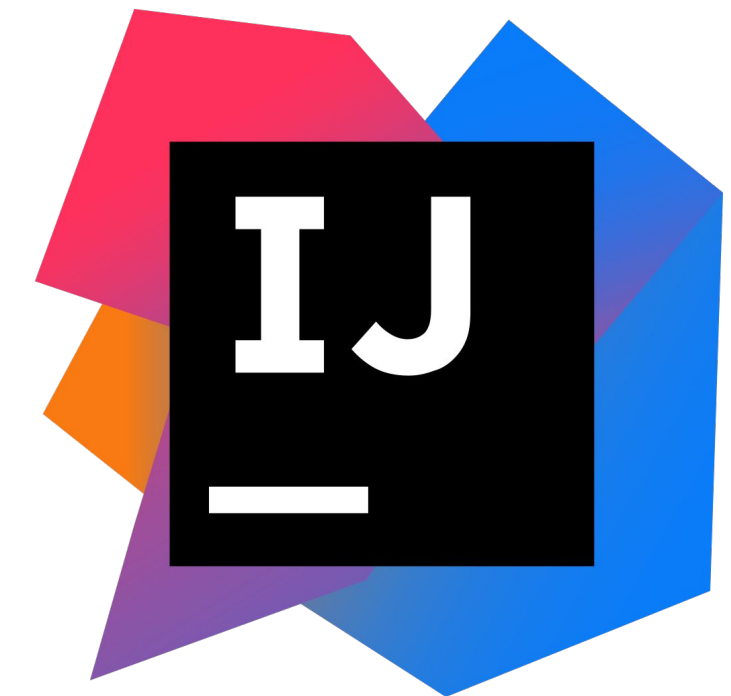
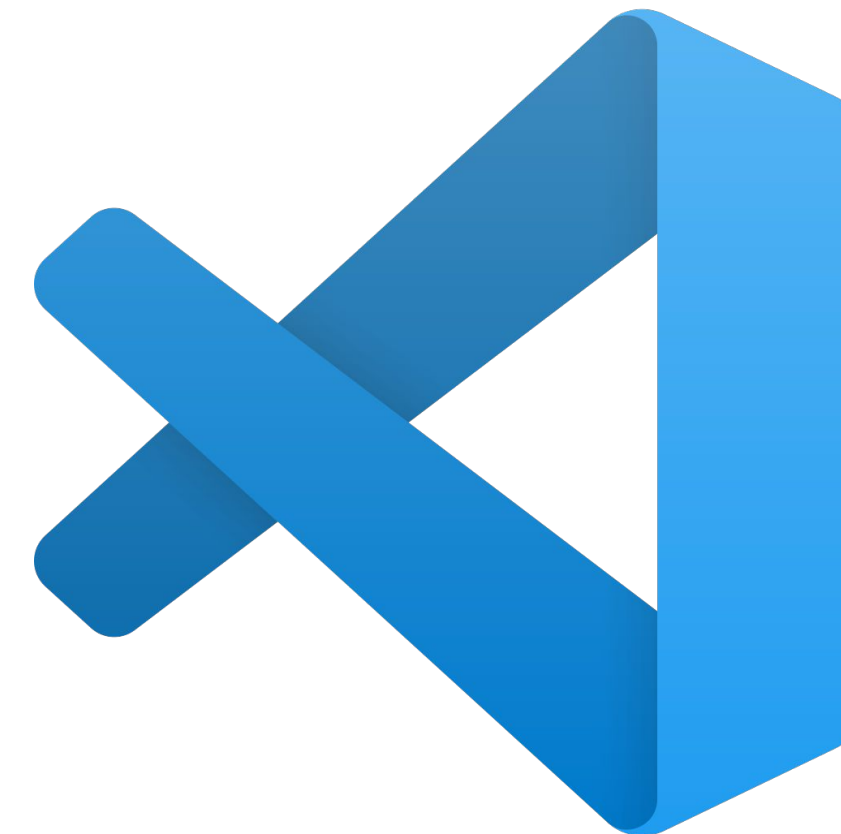
---

# Developer Experience

Visual Studio Code

IntelliJ / Android Studio

Emacs



Any editor that supports Dart

+ command line







---

# Developer Experience

- Support for Chrome, Safari, Edge und Firefox
- Debugging, Logging and Inspector
  - Dartdevc – Development compiler
  - Dart2JS – Deployment compiler
  - Dart2wasm - WebAssembly compiler
- Dart:io package not available (limited to mobile)
- Different requirements than mobile apps
  - Routing
  - HyperLinks
  - Text
  - Autofill in form fields
  - Scrollbars
  - SemanticNode Tree (Accessibility)





# Developer Experience - Web Renderer

- HTML Renderer
  - HTML, CSS, Canvas und SVG
  - Better compatibility, smaller download
  - Worse performance
- CanvasKit Renderer
  - Fully consistent to Flutter Mobile and Desktop
  - Uses WebAssembly and WebGL
  - Good performance, but higher download
- Configuration via Command Line

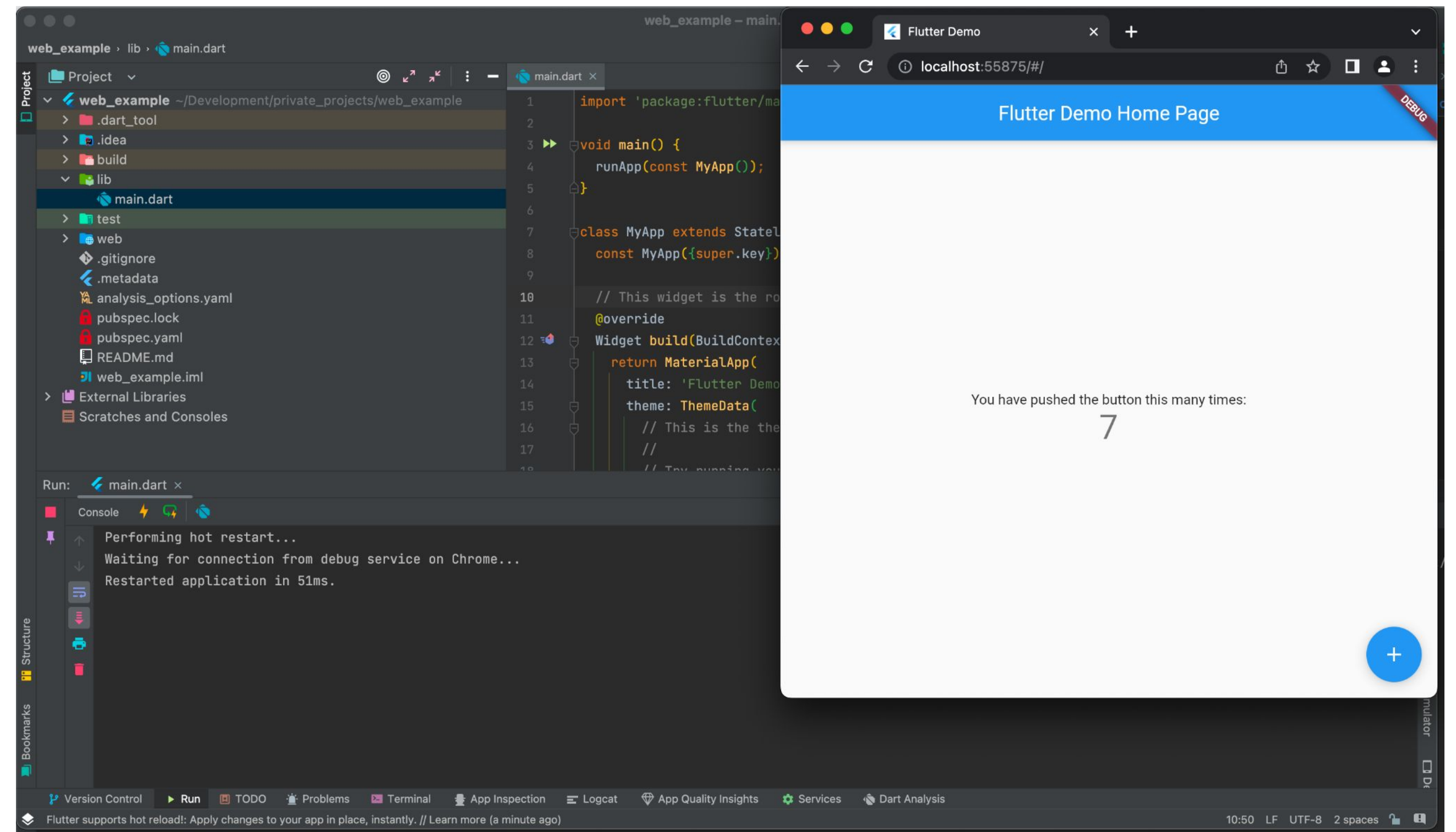
```
flutter run -d chrome --web-renderer html  
flutter run -d chrome --web-renderer canvaskit  
flutter run -d chrome --web-renderer auto
```





# Developer Experience

- Hot restart
- DevTools
- Testing Framework
- Snippets/Code Actions







# Developer Experience

- Web folder
  - index.html - important for plugin callbacks
  - Icons
  - manifest.json
    - description for PWA

The screenshot shows an IDE window with the project structure on the left and the `index.html` file open in the editor. The project structure includes a `web` folder with `icons`, `main.dart`, `test`, `index.html`, and `manifest.json`. The `index.html` file contains the following code:

```
<!DOCTYPE html>
<html>
<head>
  <!--
    If you are serving your web app in a path other than the root, change the
    href value below to reflect the base path you are serving from.

    The path provided below has to start and end with a slash "/" in order for
    it to work correctly.

    For more details:
    * https://developer.mozilla.org/en-US/docs/Web/HTML/Element/base

    This is a placeholder for base href that will be replaced by the value of
    the '--base-href' argument provided to 'flutter build'.
  -->
  <base href="$FLUTTER_BASE_HREF">

  <meta charset="UTF-8">
  <meta content="IE=Edge" http-equiv="X-UA-Compatible">
  <meta name="description" content="A new Flutter project.">

  <!-- iOS meta tags & icons -->
  <meta name="apple-mobile-web-app-capable" content="yes">
  <meta name="apple-mobile-web-app-status-bar-style" content="black">
  <meta name="apple-mobile-web-app-title" content="web_example">
  <link rel="apple-touch-icon" href="icons/Icon-192.png">

  <!-- Favicon -->
  <link rel="icon" type="image/png" href="favicon.png"/>

  <title>web_example</title>
  <link rel="manifest" href="manifest.json">

  <script>
    // The value below is injected by flutter build, do not touch.
    var serviceWorkerVersion = null;
  </script>
  <!-- This script adds the flutter initialization JS code -->
  <script src="flutter.js" defer></script>
</head>
<body>
  <script>
    window.addEventListener('load', function(ev) {
      // Download main.dart.js
      _flutter.loader.loadEntrypoint({
        serviceWorker: {

```





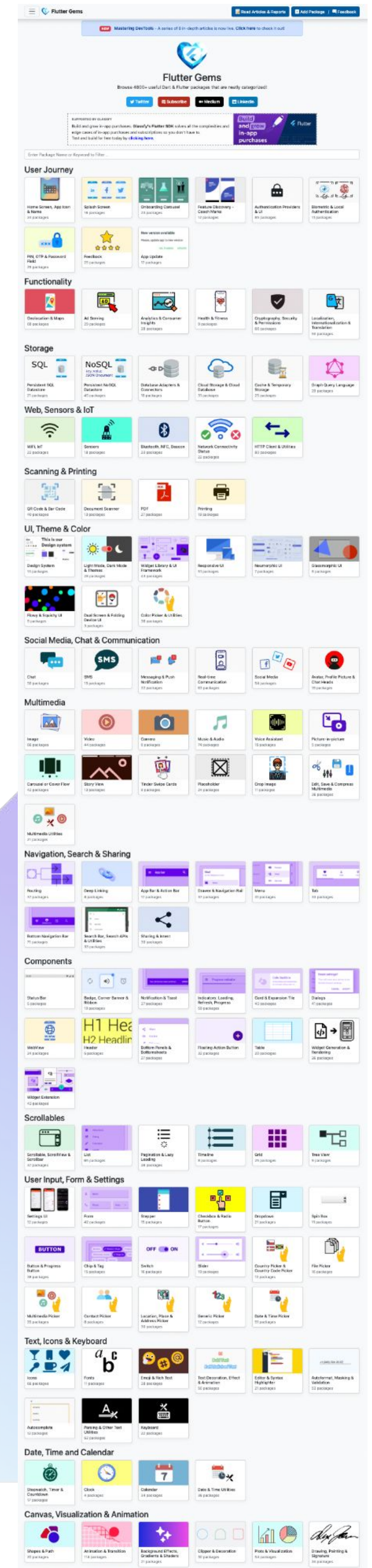
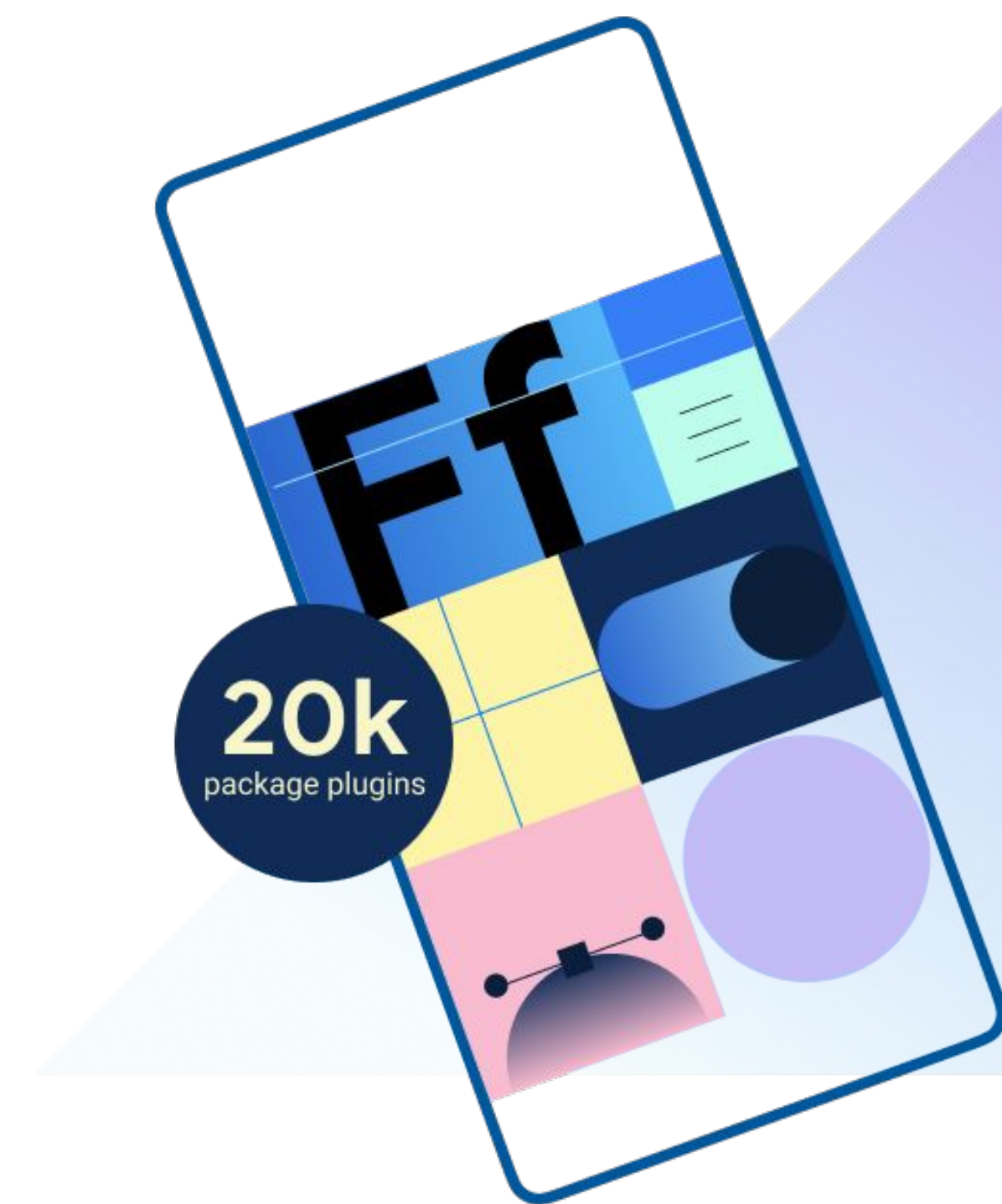
# Ecosystem

- Pub.dev or Fluttergems
- Large ecosystem of plugins, look for “web”
- 1st party plugins
- verified publishers
- open source community

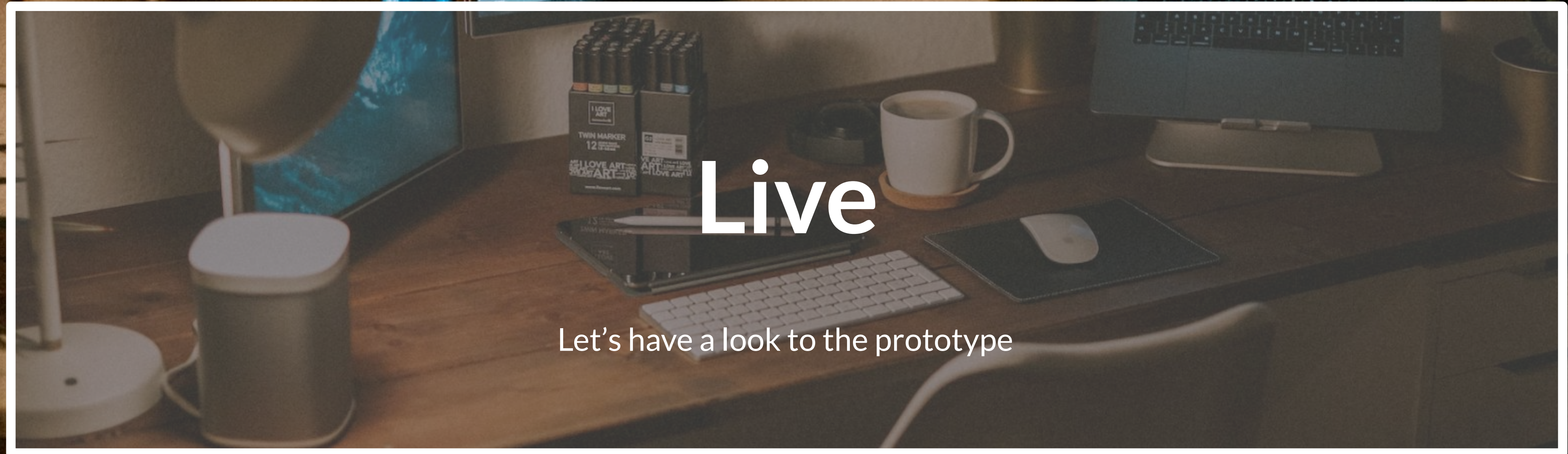
provider 6.0.5

Published 50 days ago • [dash-overflow.net](#) Dart 3 ready

SDK | FLUTTER | PLATFORM | ANDROID | IOS | LINUX | MACOS | **WEB** | WINDOWS





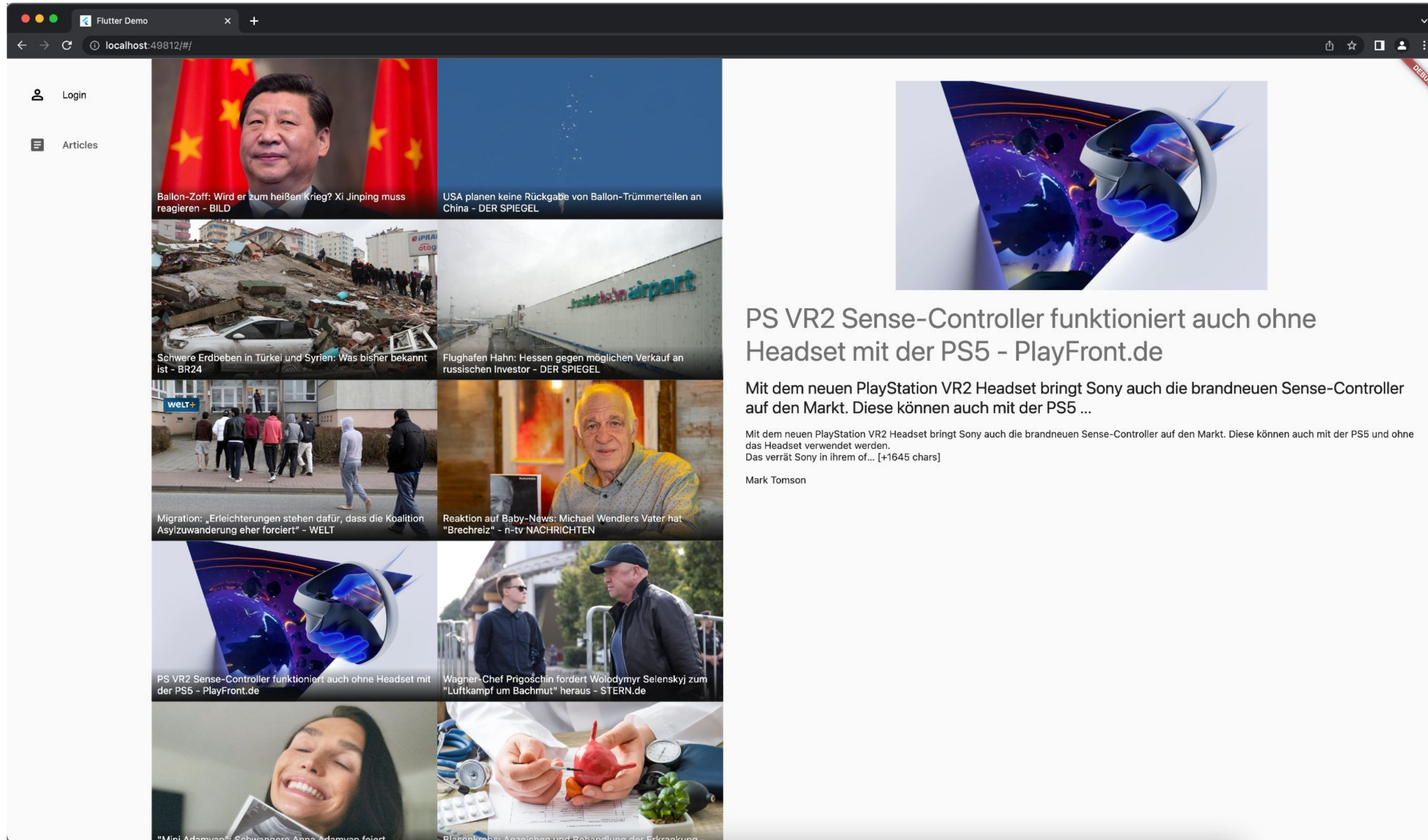






# Prototype

Wide Screen





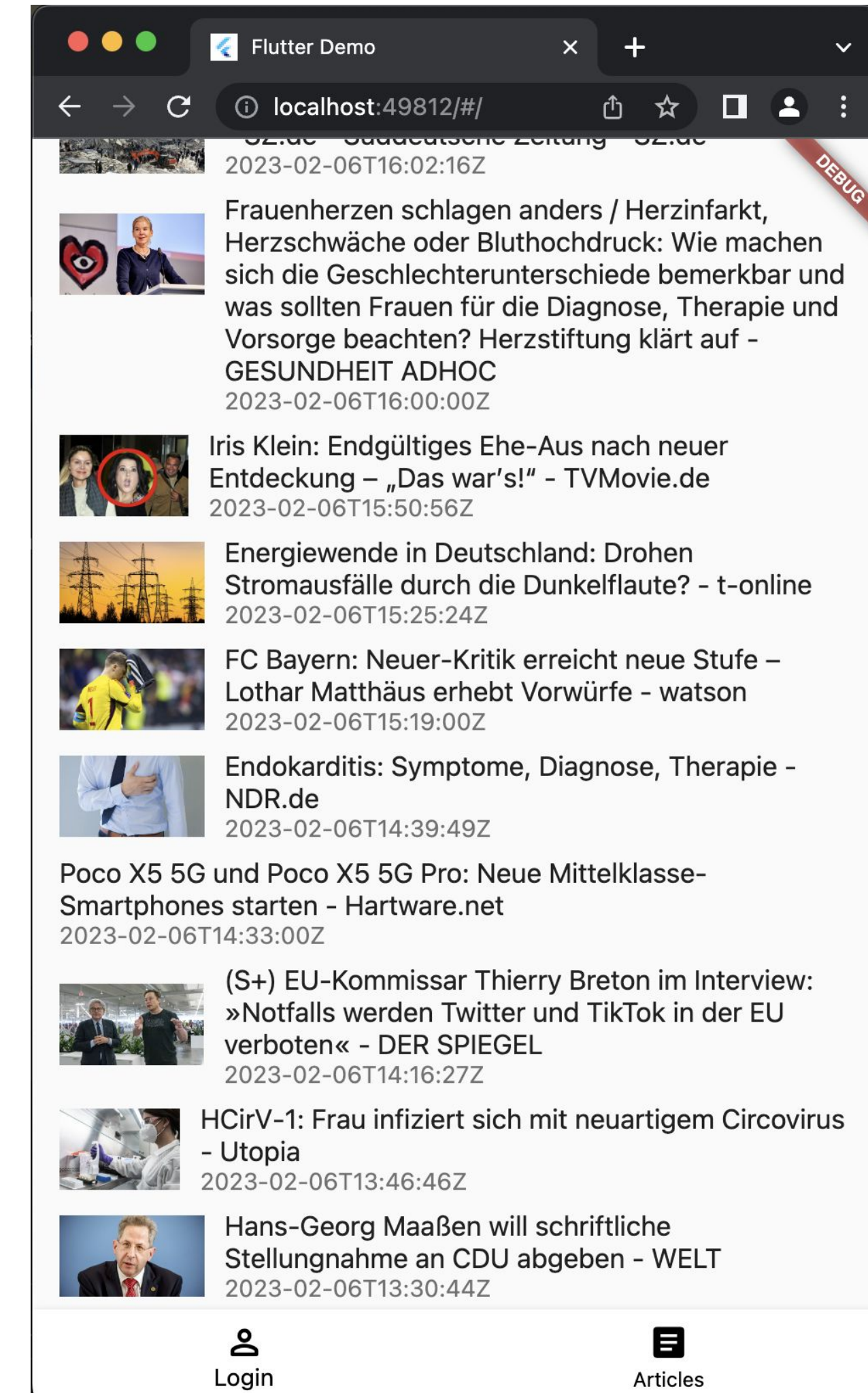


# Prototype

## Medium Screen



## Small/Mobile Screen







Let's go

Let's have a look how I did it





---

# Prototype Tasks

- Tasks
  - Adaptive Layout
  - Article
  - Article API
  - Network Client
  - ListItem
  - GridView
  - FullScreenView

---

# LITERATUR

- Official documentation:

<https://flutter.dev/>

<https://flutter.dev/multi-platform/web>

- Flutter Community Medium

<https://medium.com/flutter-community>

- Navigation API docs

<https://api.flutter.dev/flutter/widgets/Navigator-class.html>

- Flutter Gems: Curated Flutter packages

<https://fluttergems.com>



**#FueledByPassion**

**#Appsfactorian**

**#NewsBeautiful**

**#WeGetItDone**

**#BuiltForRelevance**

DANKE

Happy Fluttering and hope to see you next Meetup ;)