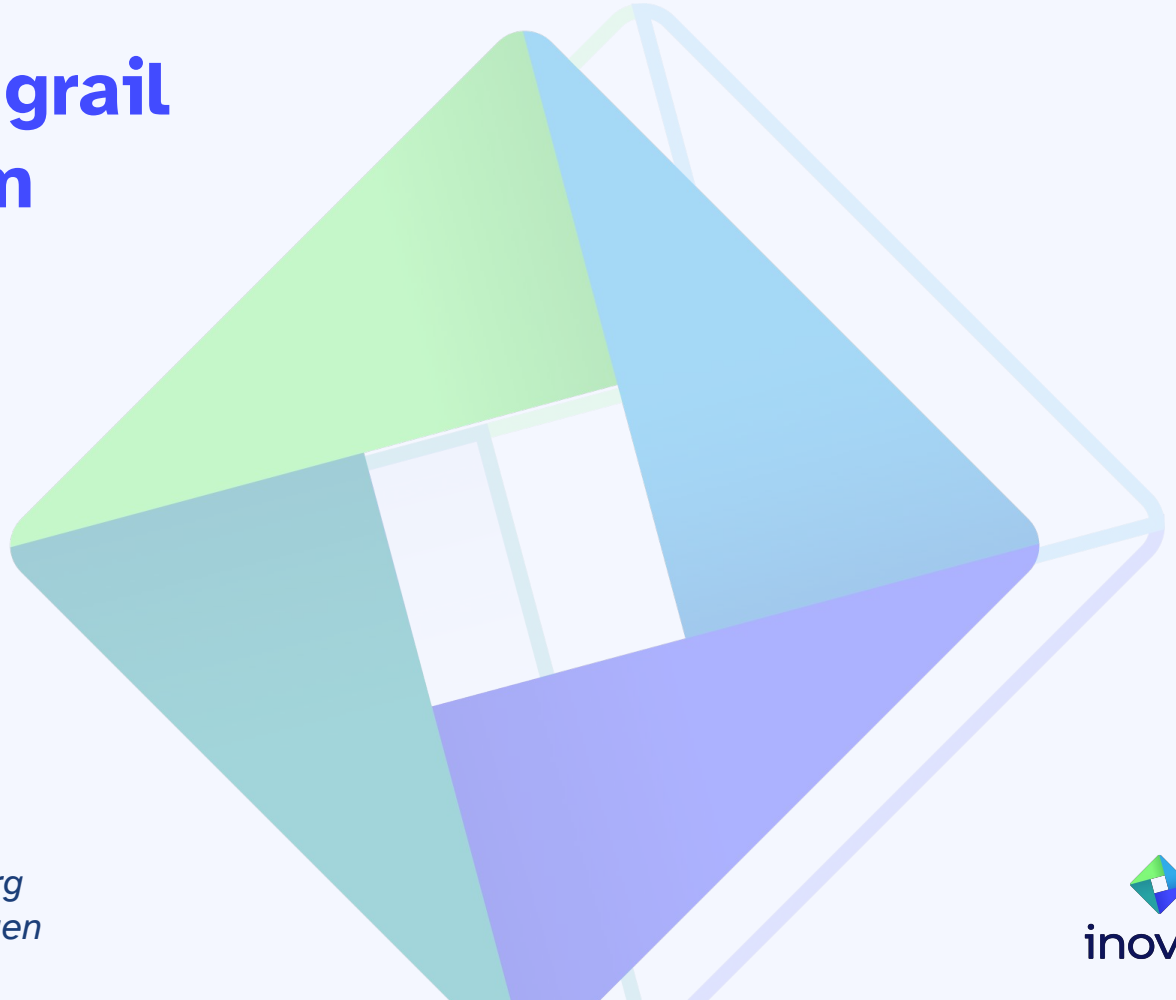


Flutter, the holy grail of cross-platform development?!

Team inovex

*Karlsruhe · Köln · München · Hamburg
Berlin · Stuttgart · Pforzheim · Erlangen*



Christoph Menzel



Christoph Menzel



@menzel42



@traveling-developer



@traveling_developer_42



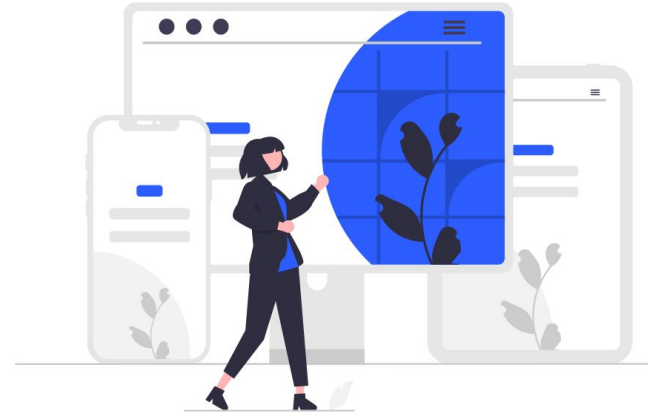
@traveling_developer@mastodon.social

Head of Mobile & Web Development

- Software developer by heart
- Working in the IT sector since 2004
- Regular speaker at tech conferences
- Main topics
 - Clean code
 - Test automation
 - Security
 - CI / CD

Why Cross-Platform?

- One Team & „One“ Tech-Stack
- Code Reusability
- One „Look-and-Feel“
- Less Technical Hurdles
- Shorter „Time to Market“
- Cost Efficient



Overview of Frameworks

- Apache Cordova (2009)
- Xamarin (2011)
- Codename One (2012)
- Ionic (2013)
- Native Script (2014)
- React Native (2015)
- Flutter (2017)
- .Net MAUI (2022)



APACHE
CORDOVA™



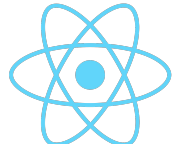
CODENAME
— ONE —



Xamarin



Flutter



React Native



ionic



NativeScript



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APACHE
CORDOVA™



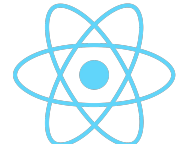
CODENAME
ONE



Xamarin



Flutter



React Native



ionic



NativeScript



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Ionic Overview

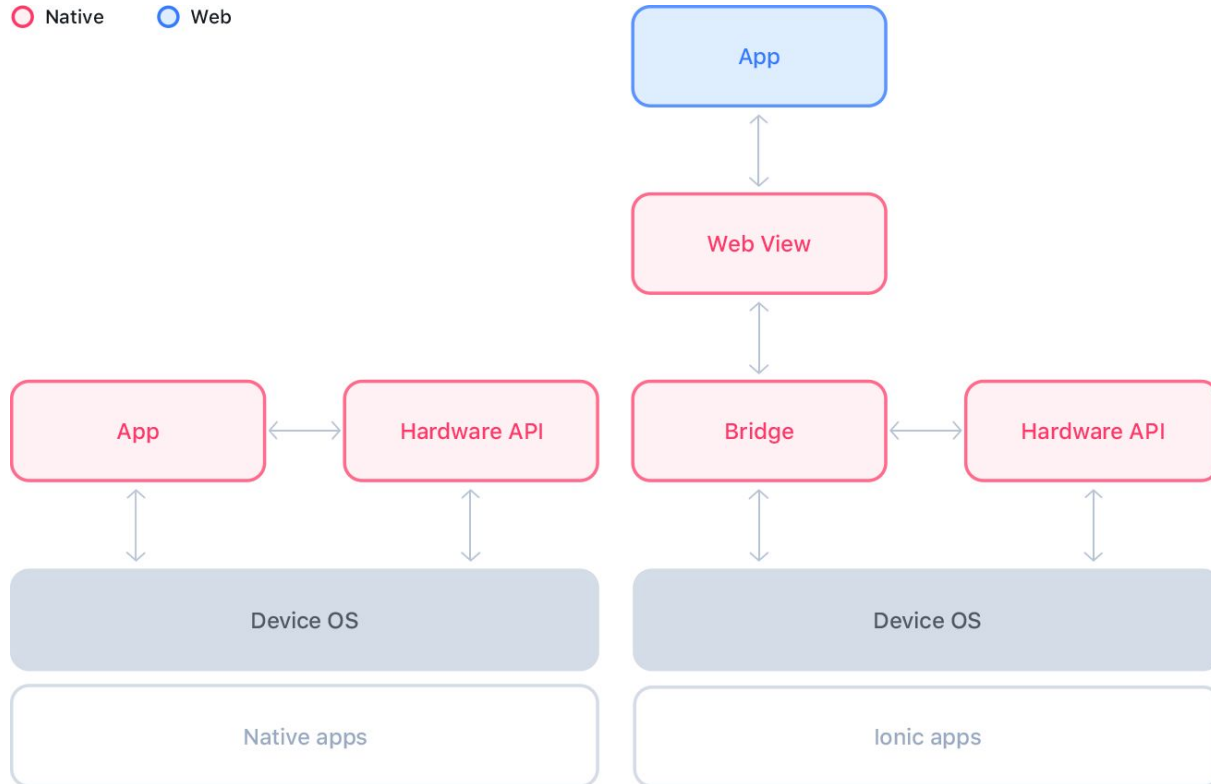
- Open Source
- Cross-Platform
 - iOS
 - Android
 - Progressive Web App
 - Electron Desktop App
- Based on Web Technologies
- Combinable popular web frameworks
 - Angular
 - React
 - Vue



Ionic Overview

○ Native

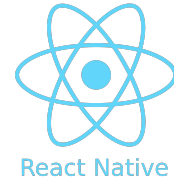
○ Web



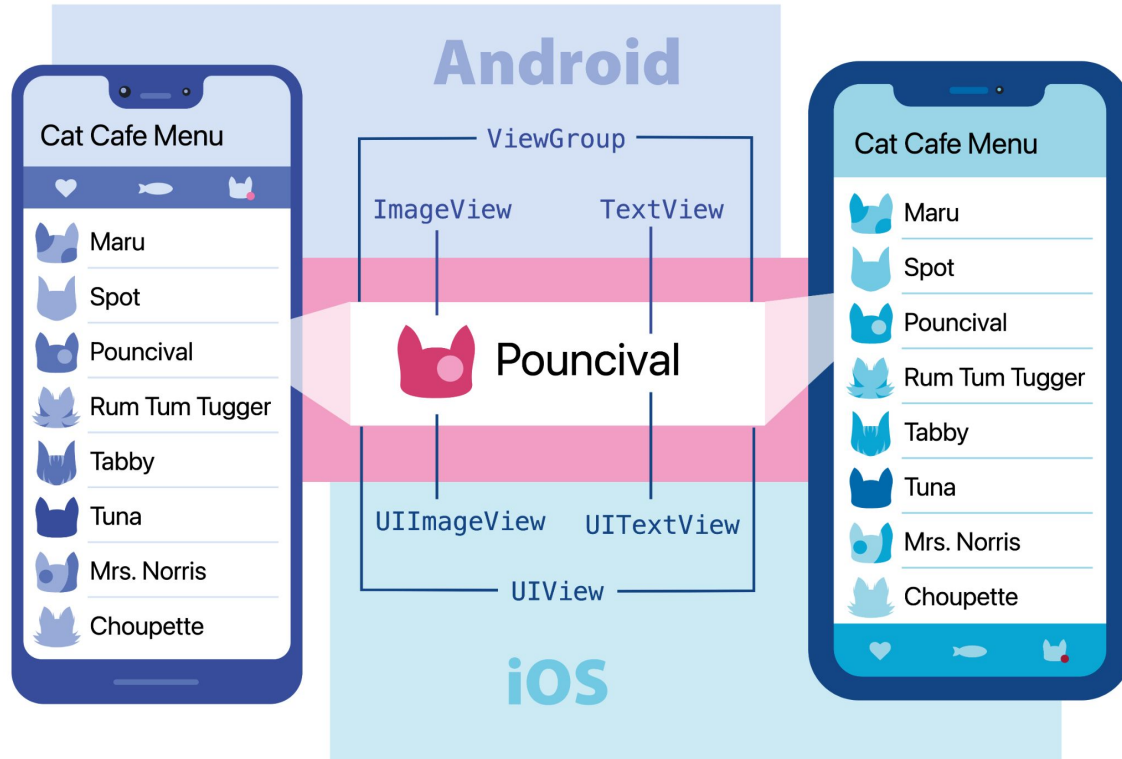
Source: <https://ionicframework.com/docs/assets/images/webview-architecture-bee351034ebbd5238a77b1a254d2dcbd.png>

React Native Overview

- Open Source
- Main sponsor is Facebook
- Cross-Platform
 - iOS
 - Android
- Based on Web Technologies
- Based on the React Web Framework



React Native Overview



Source: https://reactnative.dev/docs/assets/diagram_ios-android-views.svg

Flutter Overview

- Open Source
- Main sponsor is Google
- Cross-Platform – Single Codebase
 - Android
 - iOS
 - Web
 - Linux
 - Mac
 - Windows
 - „Embedded“
- Version 3.16.9 was released on 25.01.2024
- Dart as programming language



Who is using Flutter?



CANONICAL

Robot

ny bank

 Square

SONOS

ebay

GROUPON

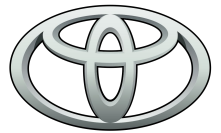


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阿里巴巴 
Alibaba.com

ubuntu 

The New York Times



TOYOTA

PHILIPS

 ByteDance

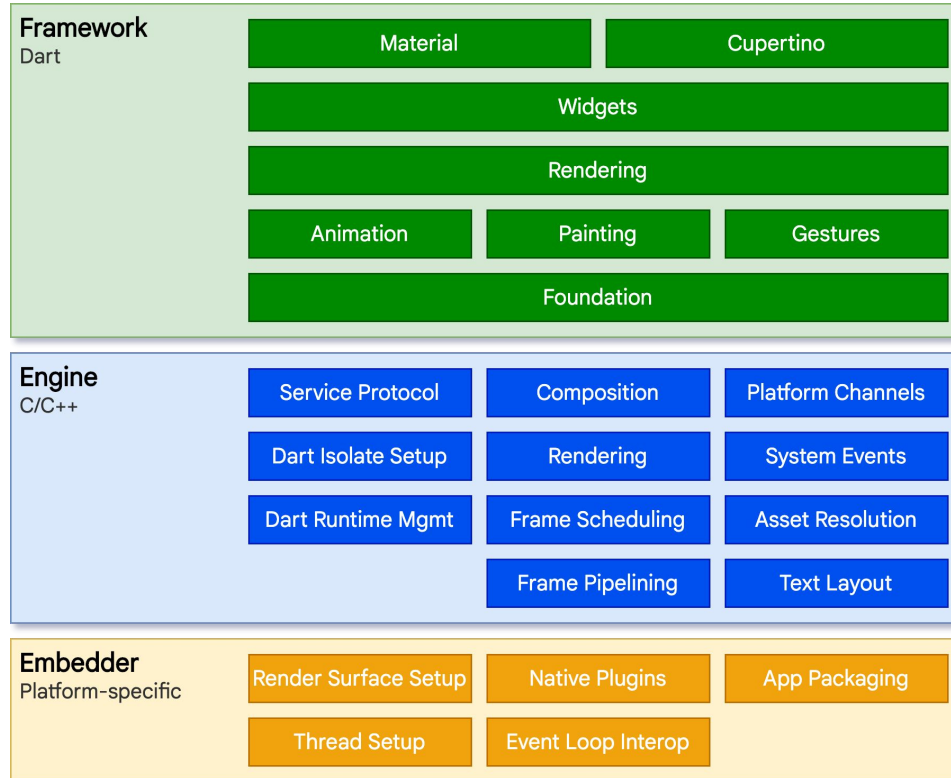
hue

 Microsoft

Tencent 

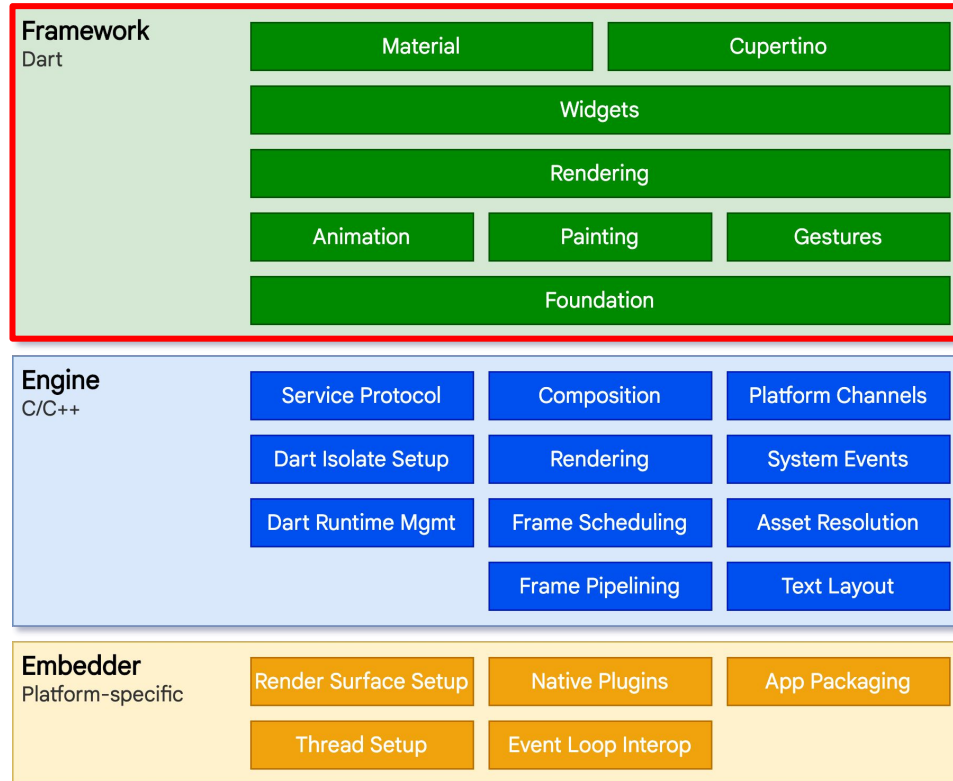
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Flutter High-Level Architecture



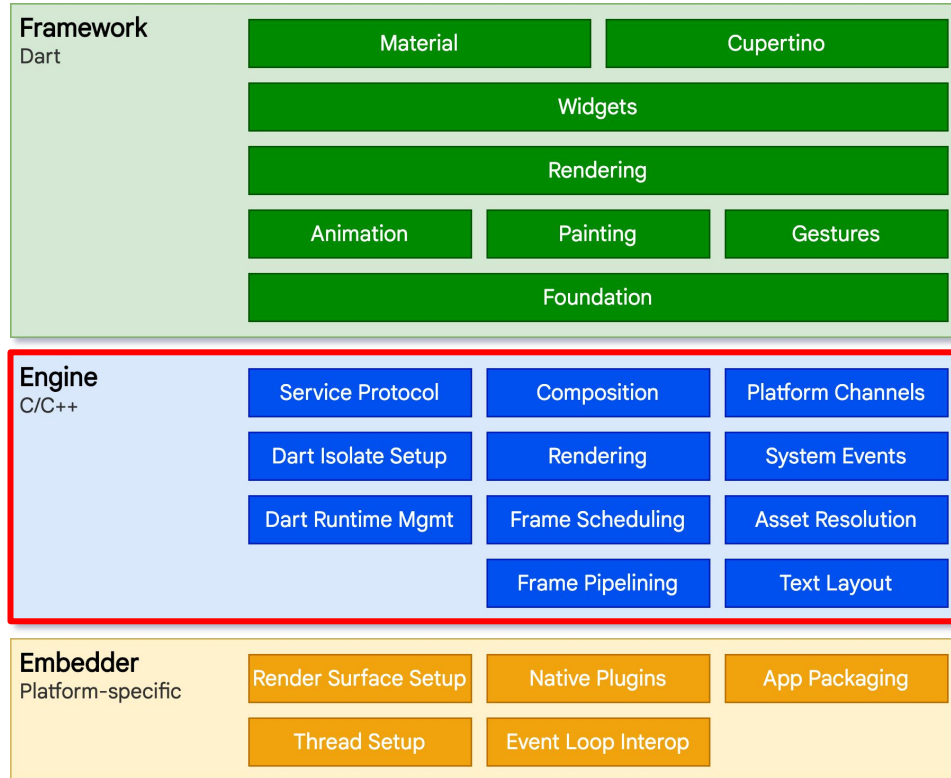
Source: <https://docs.flutter.dev/assets/images/docs/arch-overview/archdiagram.png>

Flutter High-Level Architecture



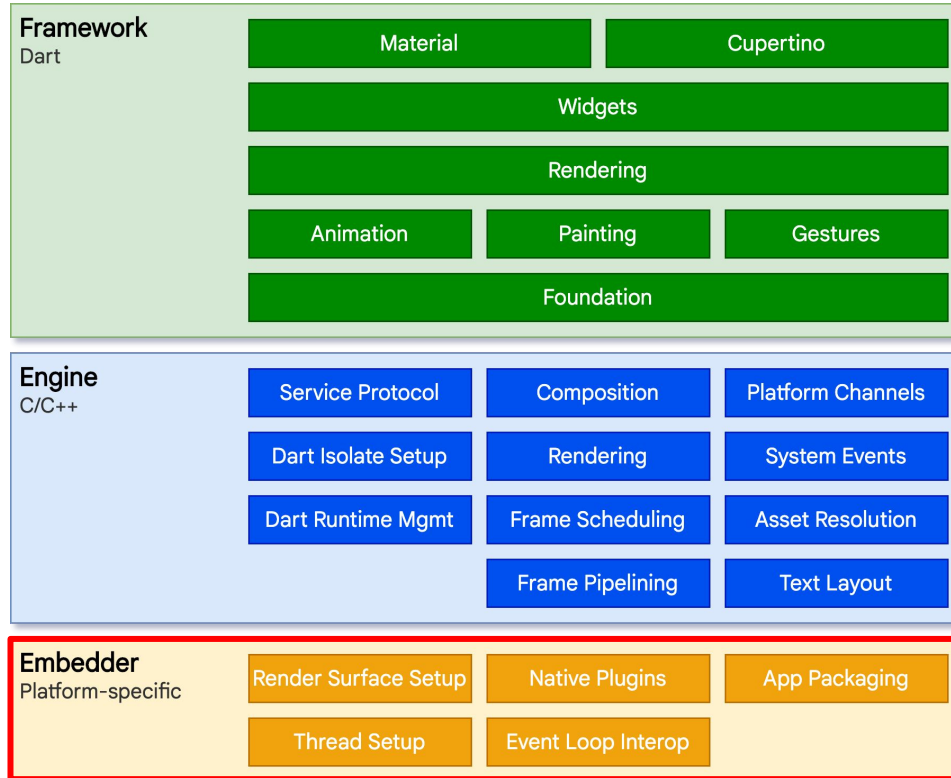
Source: <https://docs.flutter.dev/assets/images/docs/arch-overview/archdiagram.png>

Flutter High-Level Architecture



Source: <https://docs.flutter.dev/assets/images/docs/arch-overview/archdiagram.png>

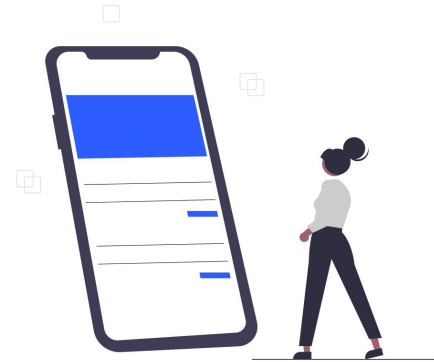
Flutter High-Level Architecture



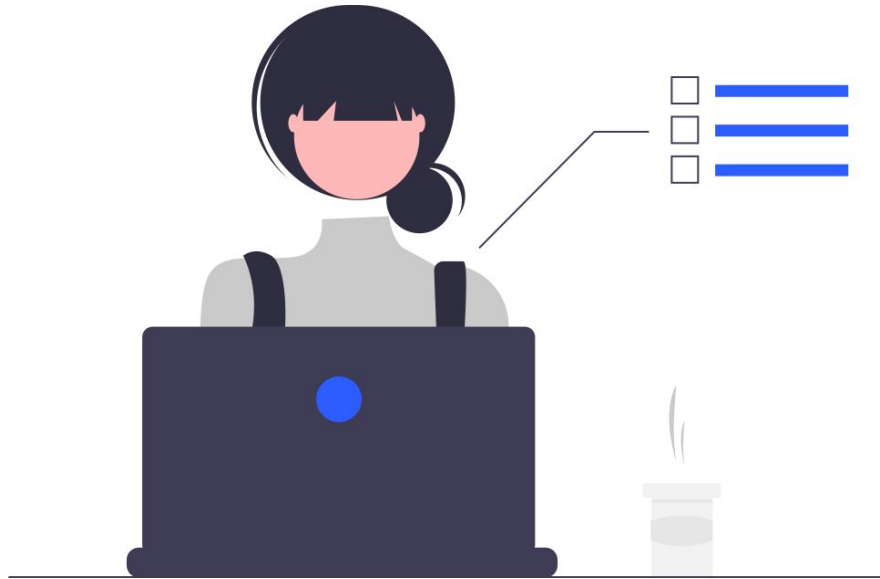
Source: <https://docs.flutter.dev/assets/images/docs/arch-overview/archdiagram.png>

Everything is a Widget

- All UI Elements are Widgets
- Layout Widgets
 - Scaffold
 - Expanded
 - ...
- Styling
 - Padding
 - Theme
 - ...
- Material Components
 - Button
 - Date & Time Picker
 - ...
- Cupertino (iOS-style)
 - Button
 - Dialog
 - ...
- ...



Live Coding



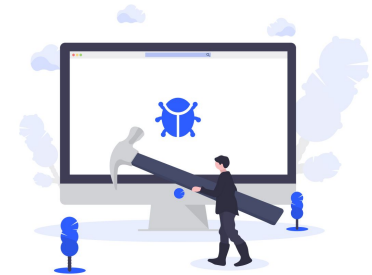
Development Tools

- Flutter Inspector
- Performance View
- CPU Profiler View
- Memory View
- Network View
- Debugger
- App Size Tool
- Formatter (dartfmt)
- Analyzer (dartanalyzer)
- ...



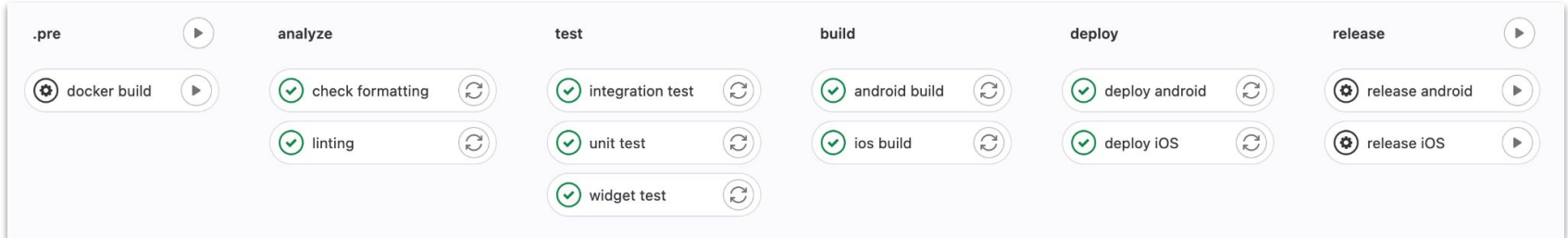
Testing

- Unit Test
 - Normal unit tests
 - Mock support by Mockito (Dart)
- Widget Test
 - Tests for individual widgets
 - Goal is to test the interaction and appearance of the widget
- Integration Test
 - Test of the whole app or parts of it
 - Runs on an OS emulator / simulator

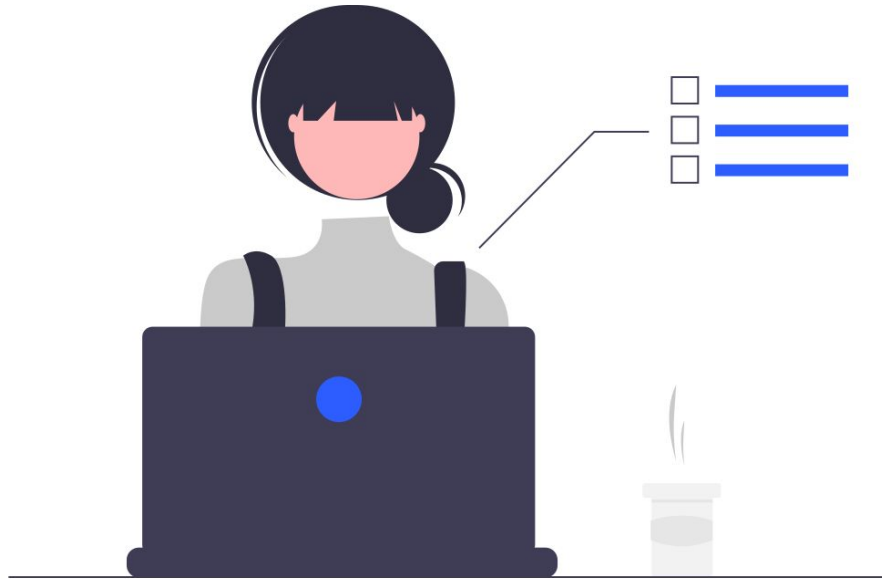


CI / CD

- All together in one pipeline
 - Analyze
 - Test
 - Build
 - Deploy

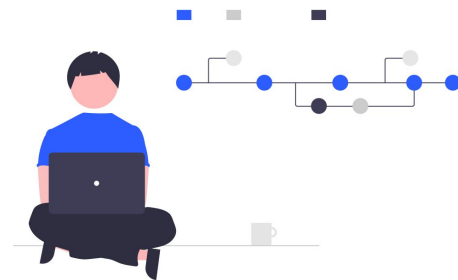


Live Coding



Outlook

- Impeller (already for iOS, preview for Android)
- RISC-V support
- WebAssembly support
- Multiple window support
- Drag and drop
- ...



Q&A



Vielen Dank!



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