



Google Flutter

and why does it matter

By
Ahmed Abu Eldahab



/FlutterEgypt



/FlutterEgypt

About Me



My name is Ahmed Abu Eldahab

- I wrote my first line of code 22 years ago.
- I have 15+ years experience with software (Web - Mobile - Desktop)
- Founder & CTO DahabIT
- GDG Alexandria member



/Dahabdev



/Dahabdev



/Dahabit

Mobile Platforms



Mobile Platforms



Mobile Platforms



Mobile Platforms



Mobile Development Approaches



Native Approach



Swift



Kotlin



Hybrid Approach



Hybrid Approach



APACHE
CORDOVA™



Cross-Platform Approach



Google Flutter
Dart



JavaScript



Xamarin

C#



JavaScript



appcelerator[®]

JavaScript

So what is Flutter ?



Flutter is the next step in app development

- ✓ **Speed and performance**
Fast, smooth, predictable
- ✓ **Flexibility**
Customization, control
- ✓ **Native look and feel**
Familiarity, ease of use
- ✓ **Less time to market**
Rapid development, free



What makes Flutter unique?



Flutter

- Compiles to Native Code (ARM Binary code)
- No reliance on OEM widgets
- No bridge needed

What language is Flutter built with?





What is Dart?

- Open-source web programming language developed by Google.
- Class-based, single-inheritance, object oriented language with C-style syntax.
- Supports interfaces, abstract classes, reified generics, and optional typing(Dart 1) and strong typing (Dart 2)..

One language to rule them all..

Dart What is Dart?



DART

- Language and libraries
- Tools
- VM
- Compiler to JavaScript

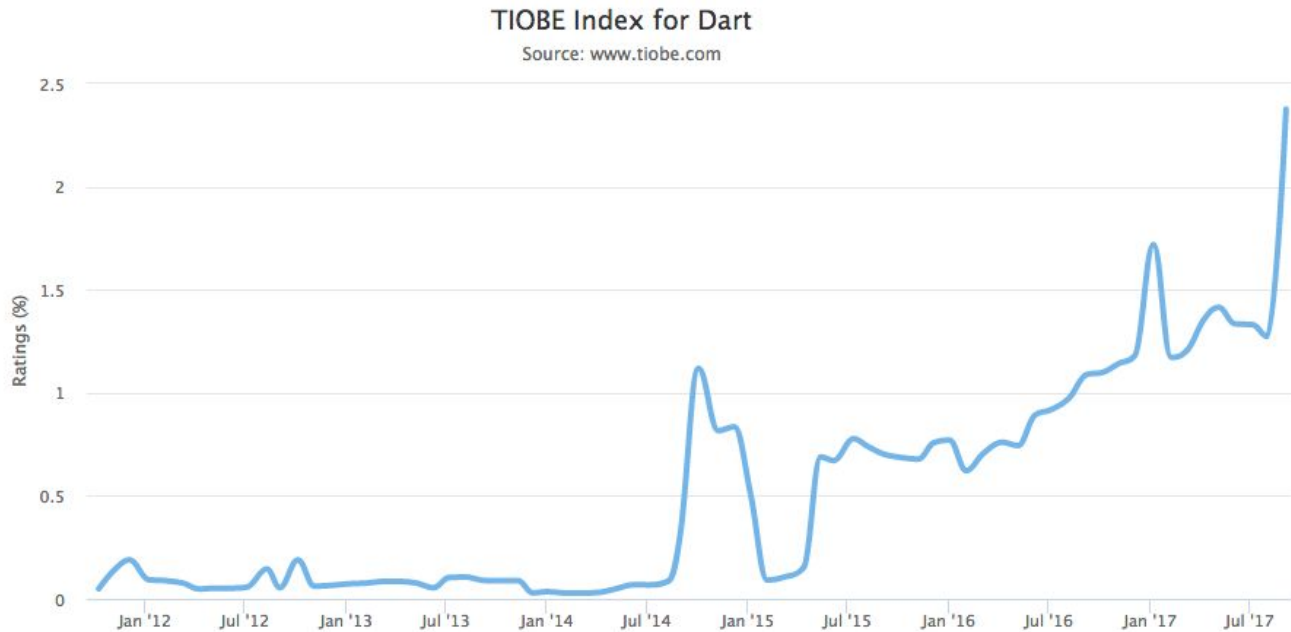


#dartlang



Dart

What is Dart?



<https://www.tiobe.com/tiobe-index/dart/>



What is Dart?





What is Dart?



Dart 2

01.

Strong mode

Better code quality and
productivity for large-scale
apps

02.

New language features

More lightweight syntax
e.g. optional new and const

03.

Common front-end

Consistent behavior and error
messages across tools

<https://www.dartlang.org/dart-2>



Dart

What is Dart?



More lightweight syntax with optional new and const

```
Widget build(BuildContext context) {  
  return new Container(  
    height: 56.0,  
    padding: const EdgeInsets.symmetric(horizontal: 8.0),  
    decoration: new BoxDecoration(color: Colors.blue[500]),  
    child: new Row(  
      ...  
    ),  
  );  
}
```

<https://www.dartlang.org/dart-2>



Dart

What is Dart?



More lightweight syntax with optional new and const

```
Widget build(BuildContext context) =>
  Container(
    height: 56.0,
    padding: EdgeInsets.symmetric(horizontal: 8.0),
    decoration: BoxDecoration(color: Colors.blue[500]),
    child: Row(
      ...
    ),
  );
```

<https://www.dartlang.org/dart-2>



Who use Dart?

Google AdWords

Google Fuchsia

Google Fiber

**AdSense
performance reports**

Mandrill

AdWords for video

**Google internal
sales tool**

**Google internal
CRM**

Adobe

<https://www.dartlang.org/community/who-uses-dart>



Google Fuchsia

Fuchsia is a capability-based, real-time operating system (RTOS) currently being developed by Google.

<https://github.com/fuchsia-mirror/>



Google Fuchsia

The screenshot shows the GitHub organization page for Google Fuchsia. The header includes navigation links: 'This organization', 'Search', 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. The organization's profile features the Fuchsia logo, the name 'Fuchsia', and the tagline 'Pink + Purple == Fuchsia (a new Operating System)'. Below this, there are tabs for 'Repositories' (223) and 'People' (12). A search bar for repositories is present, along with filters for 'Type: All' and 'Language: All'. A repository titled 'third_party-llvm' is highlighted, showing it is an LLVM project with 4 stars and 4 forks, updated 5 minutes ago. A green line graph indicates recent activity. A pink box highlights the 'Top languages' section, which lists C++ (pink), C (black), Go (blue), Dart (teal), and Python (dark blue).

GitHub organization page for Google Fuchsia.

Navigation: This organization Search Pull requests Issues Marketplace Explore

Organization: Fuchsia (Pink + Purple == Fuchsia (a new Operating System))

Repositories: 223 People: 12

Search repositories... Type: All Language: All

Repository: **third_party-llvm**

LLVM ★ 4 🍴 4 Updated 5 minutes ago

Top languages: C++ C Go Dart Python

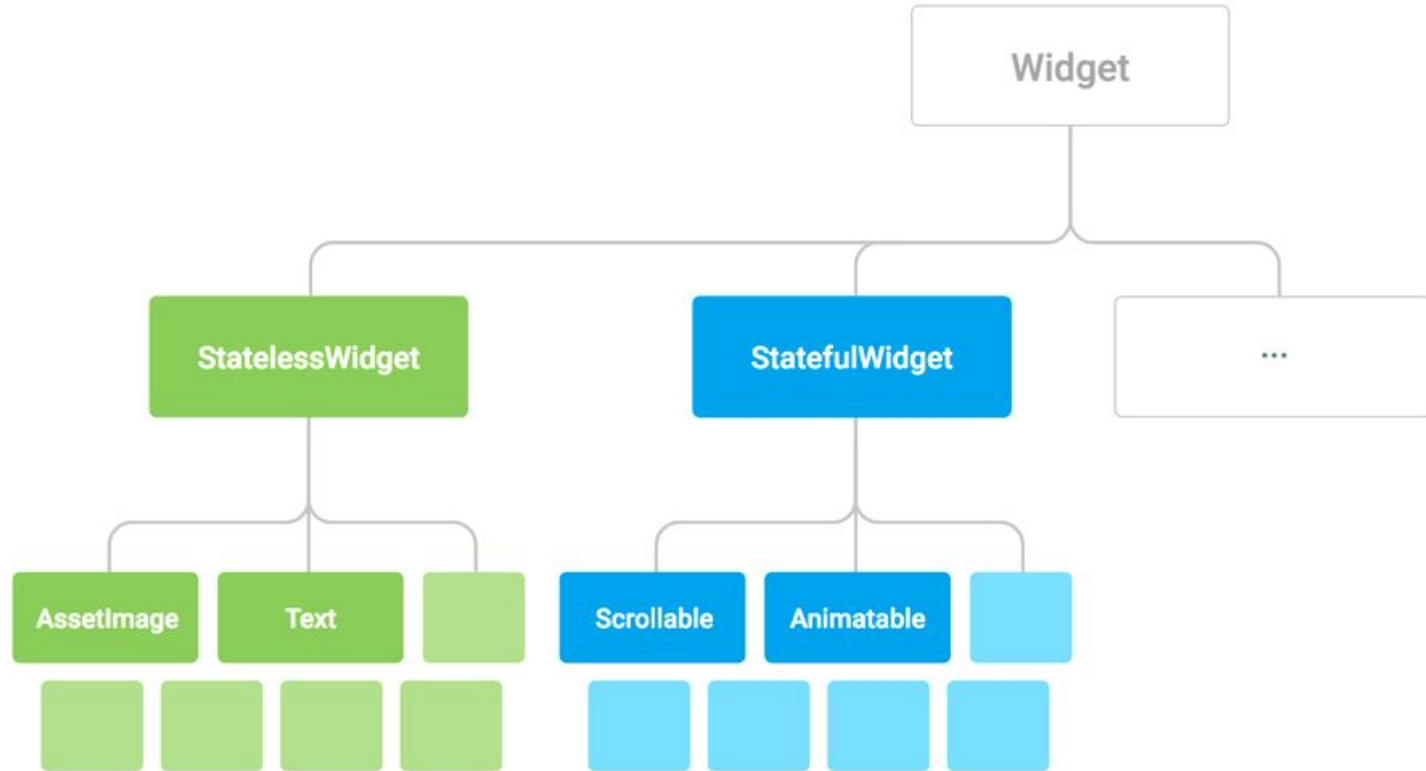
<https://github.com/fuchsia-mirror/>

How Flutter works ?

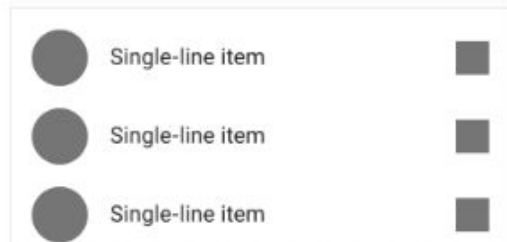


Flutter

Everything is a Widget



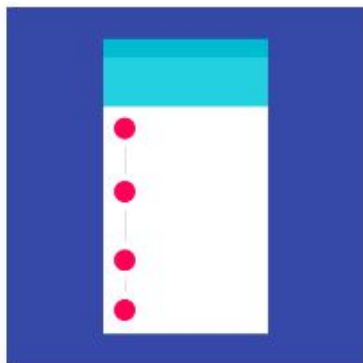
Layout



ListTile

A single fixed-height row that typically contains some text as well as a leading or trailing icon.

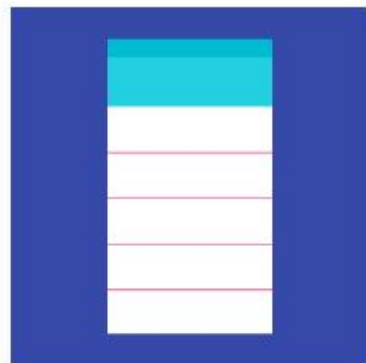
[Documentation](#)



Stepper

A material stepper widget that displays progress through a sequence of steps.

[Documentation](#)



Divider

A one logical pixel thick horizontal line, with padding on either side.

[Documentation](#)

<https://flutter.io/widgets/widgetindex/>

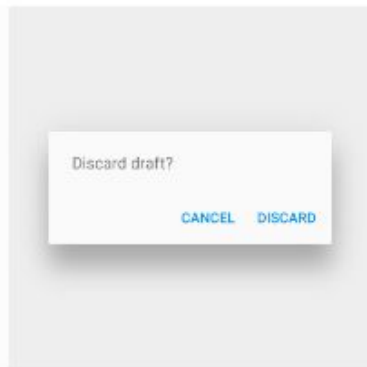
Dialogs, alerts, and panels



SimpleDialog

Simple dialogs can provide additional details or actions about a list item. For example they can display avatars icons clarifying subtext or orthogonal actions...

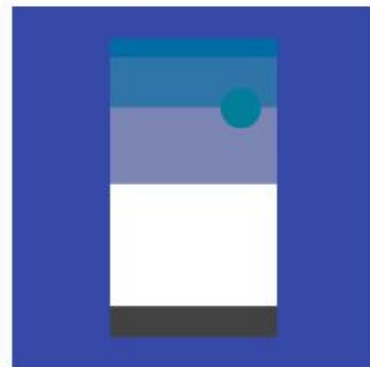
[Documentation](#)



AlertDialog

Alerts are urgent interruptions requiring acknowledgement that inform the user about a situation. The AlertDialog widget implements this component.

[Documentation](#)



BottomSheet

Bottom sheets slide up from the bottom of the screen to reveal more content. You can call `showBottomSheet()` to implement a persistent bottom sheet or...

[Documentation](#)

<https://flutter.io/widgets/widgetindex/>

Basics

Widgets you absolutely need to know before building your first Flutter app.

[VISIT](#)

Material Design

Visual, behavioral, and motion-rich widgets implementing Google's [Material Design guidelines](#).

[VISIT](#)

Cupertino (iOS-style widgets)

Beautiful and high-fidelity widgets for current iOS design language.

[VISIT](#)

Layout

Arrange other widgets columns, rows, grids, and many other layouts.

[VISIT](#)

Text

Display and style text.

[VISIT](#)

Assets, Images, and Icons

Manage assets, display images, and show icons.

[VISIT](#)

Input

Take user input in addition to input widgets in in Material Design and Cupertino.

[VISIT](#)

Animation and Motion

Bring animations to your app. Check out [Animations](#) in Flutter for an overview.

[VISIT](#)

Interaction Models

Respond to touch events and route users to different views.

[VISIT](#)

Styling

Manage the theme of your app, makes your app responsive to screen sizes, or add padding.

[VISIT](#)

Painting and effects

These widgets apply visual effects to the children without changing their layout, size, or position.

[VISIT](#)

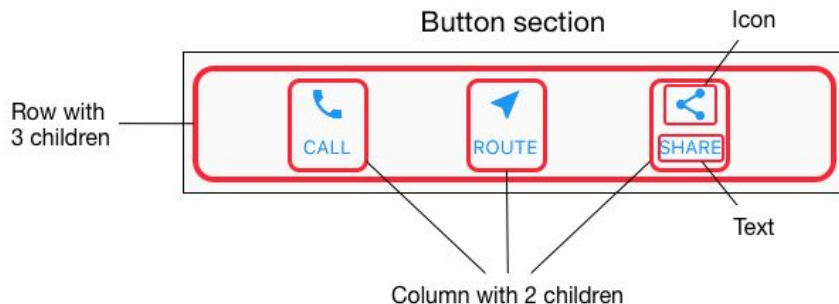
Async

Async patterns to your Flutter application.

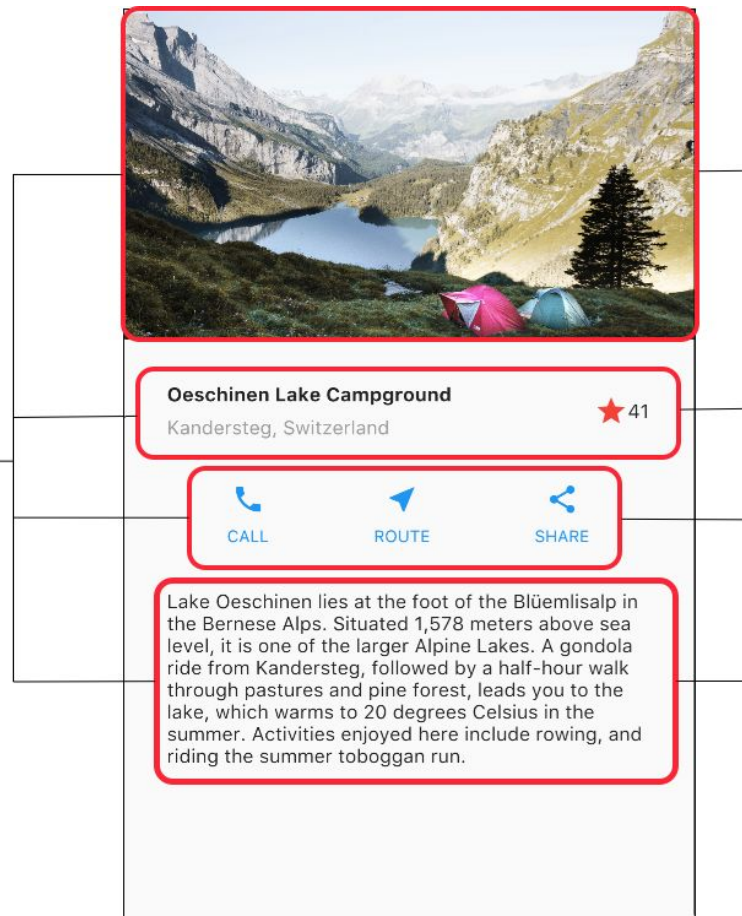
[VISIT](#)

<https://flutter.io/widgets/>

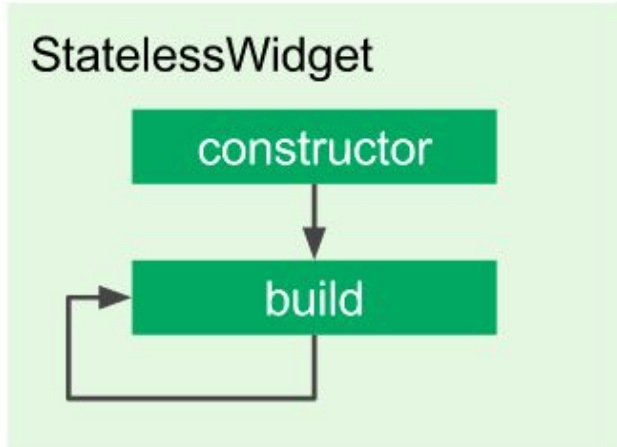
Rows and columns



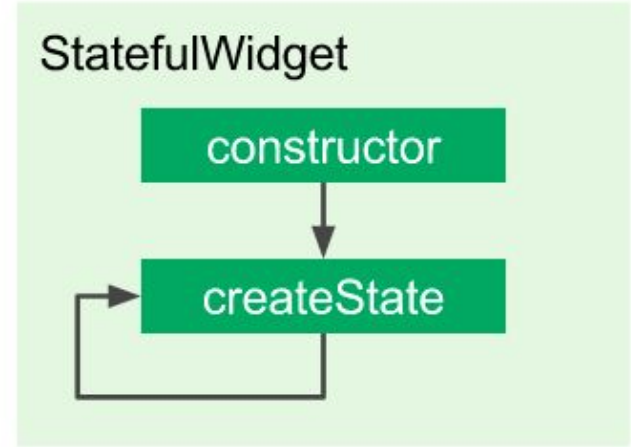
Column



StatefulWidget vs. StatelessWidget



A single StatelessWidget can build in many different BuildContexts



A StatefulWidget creates a new State object for each BuildContext

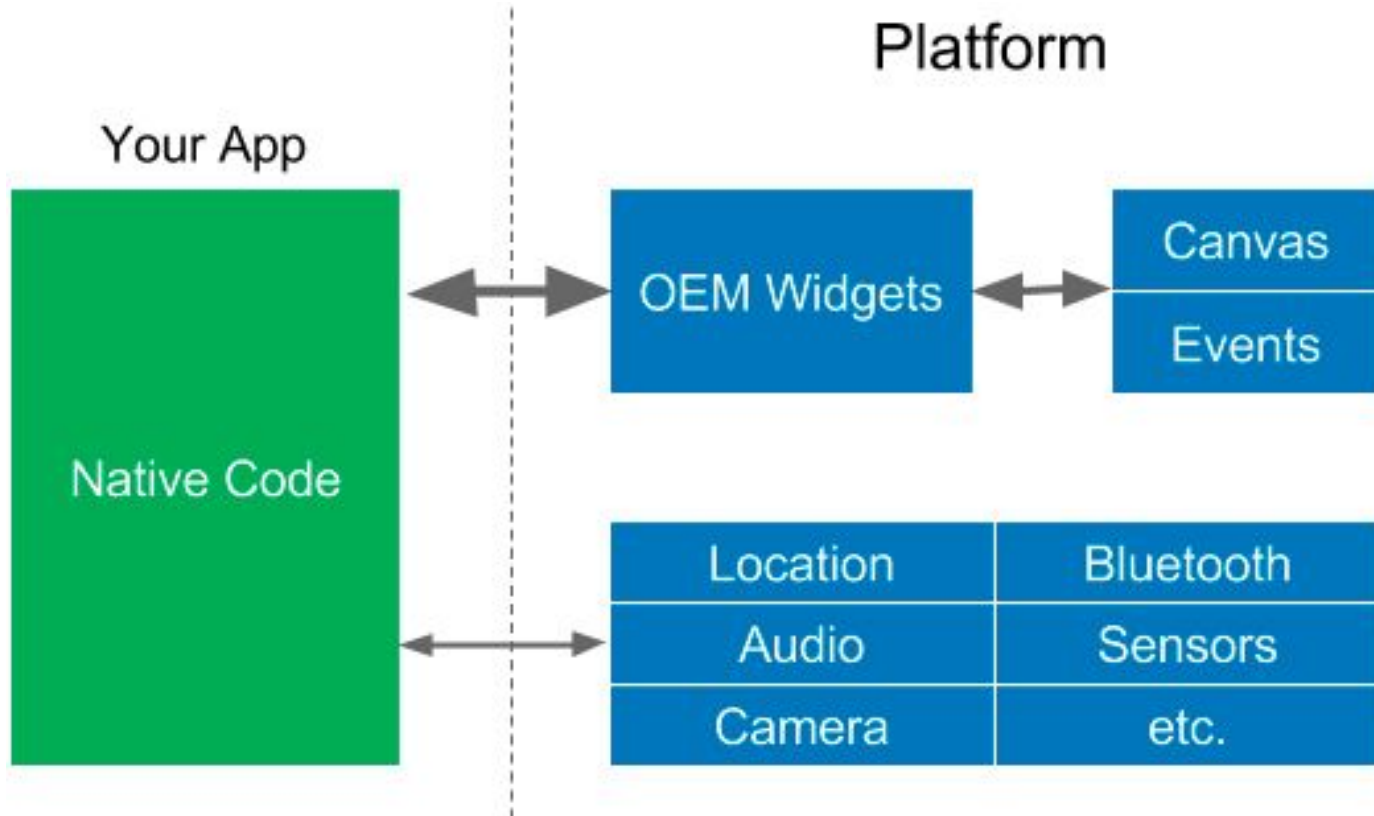
You Can customize everything in green



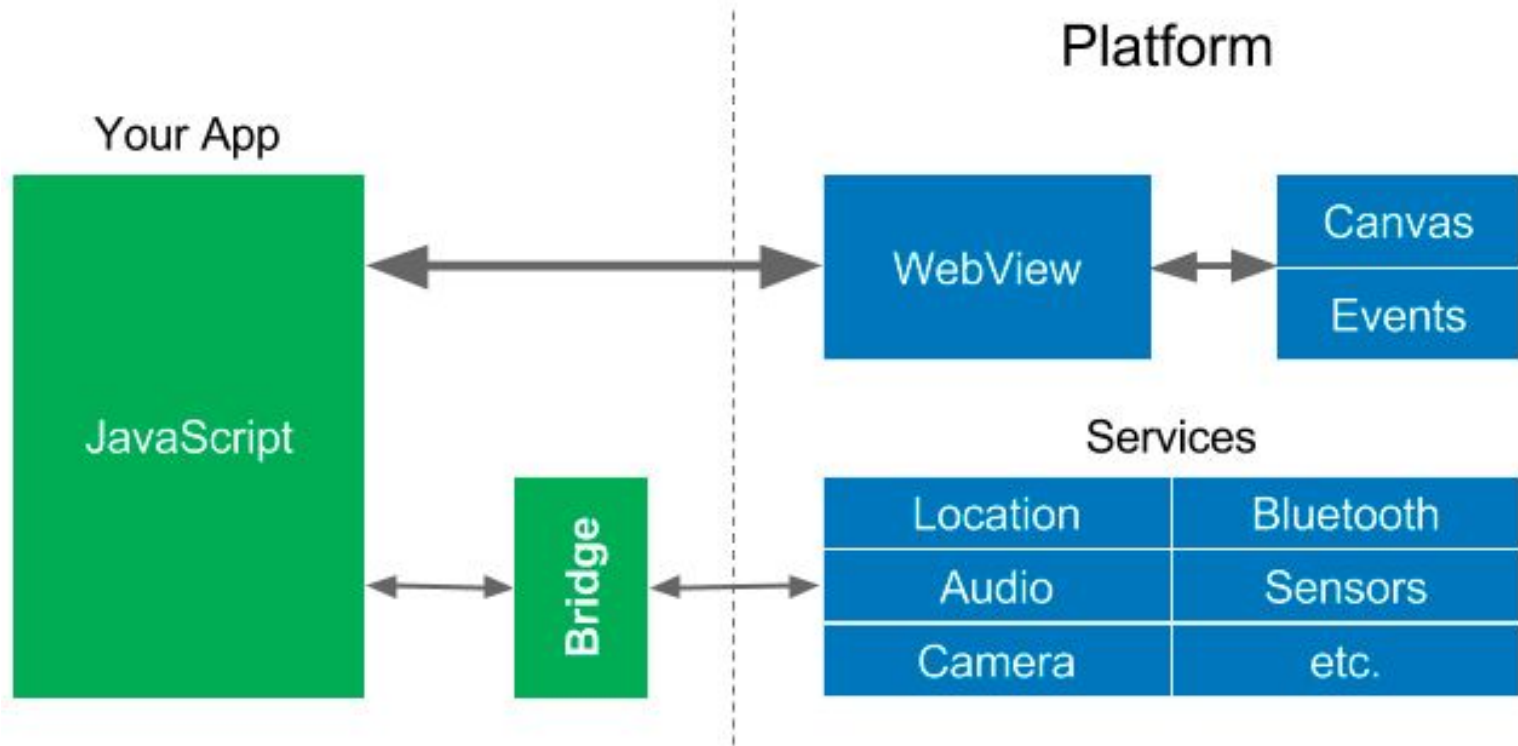
What's make Flutter unique ?



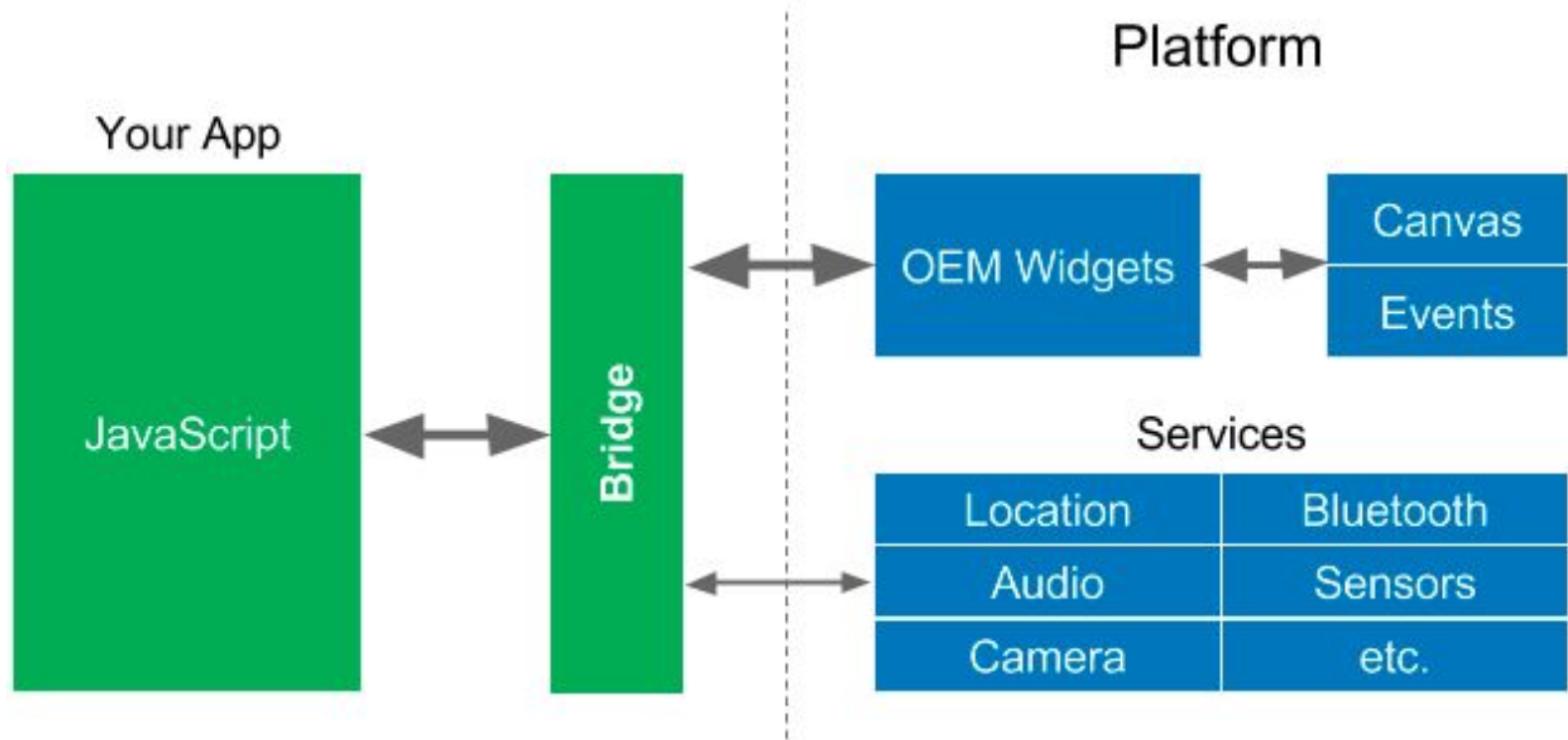
OEM SDKs



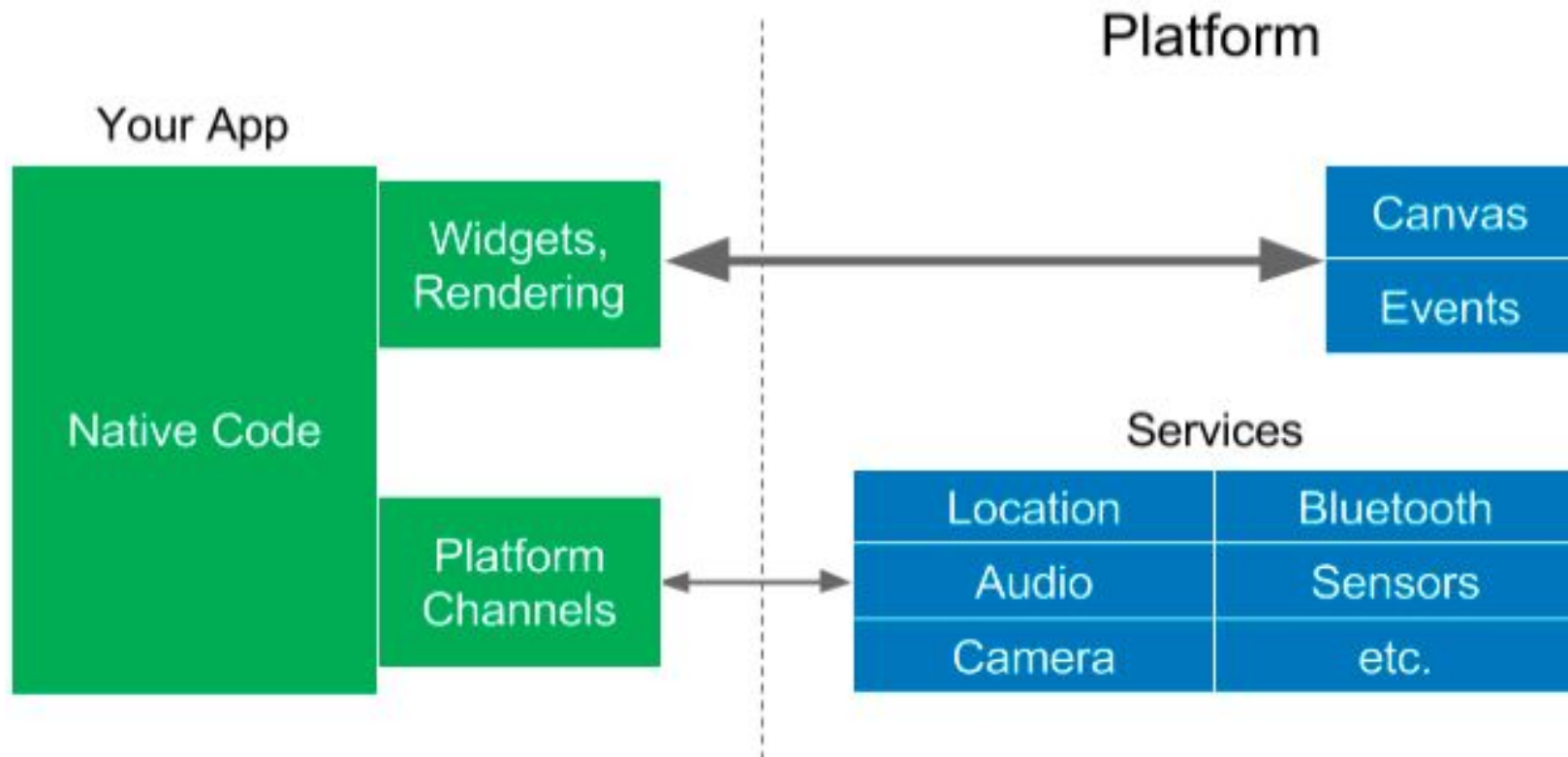
WebViews



Reactive Views



Flutter

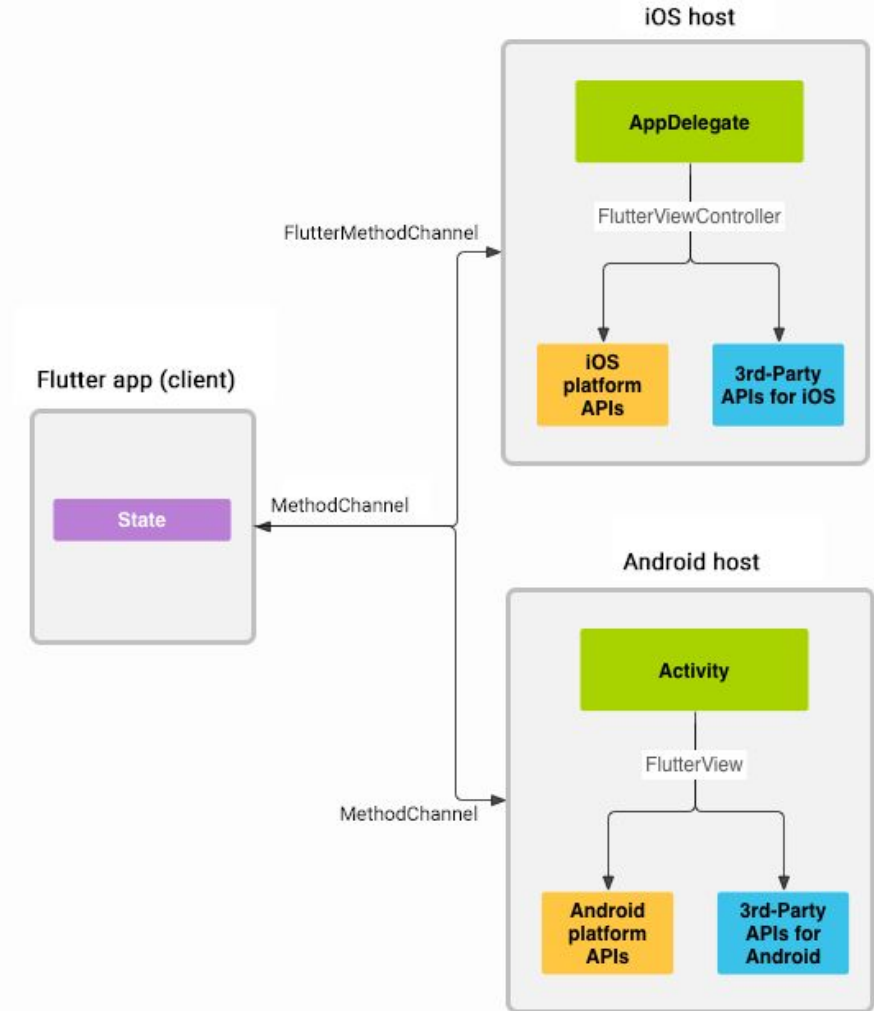


Platform channels



Flutter

<https://flutter.io/platform-channels/>

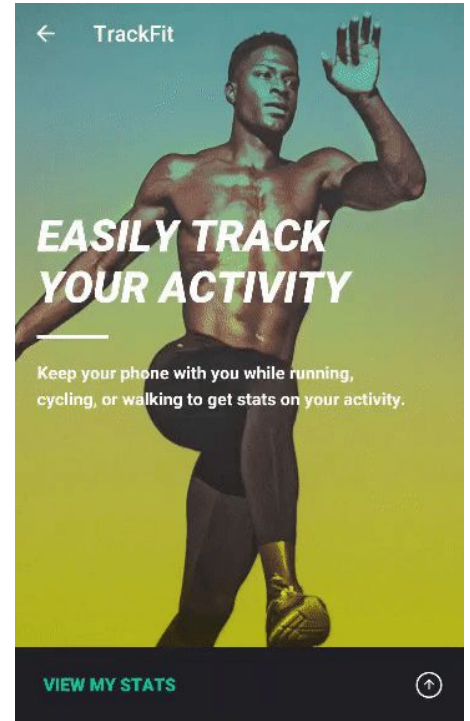
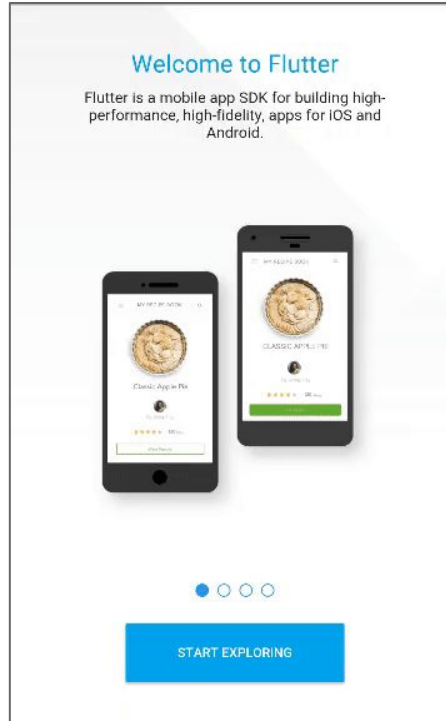


What else ?



Flutter

Great looking and fast Widgets



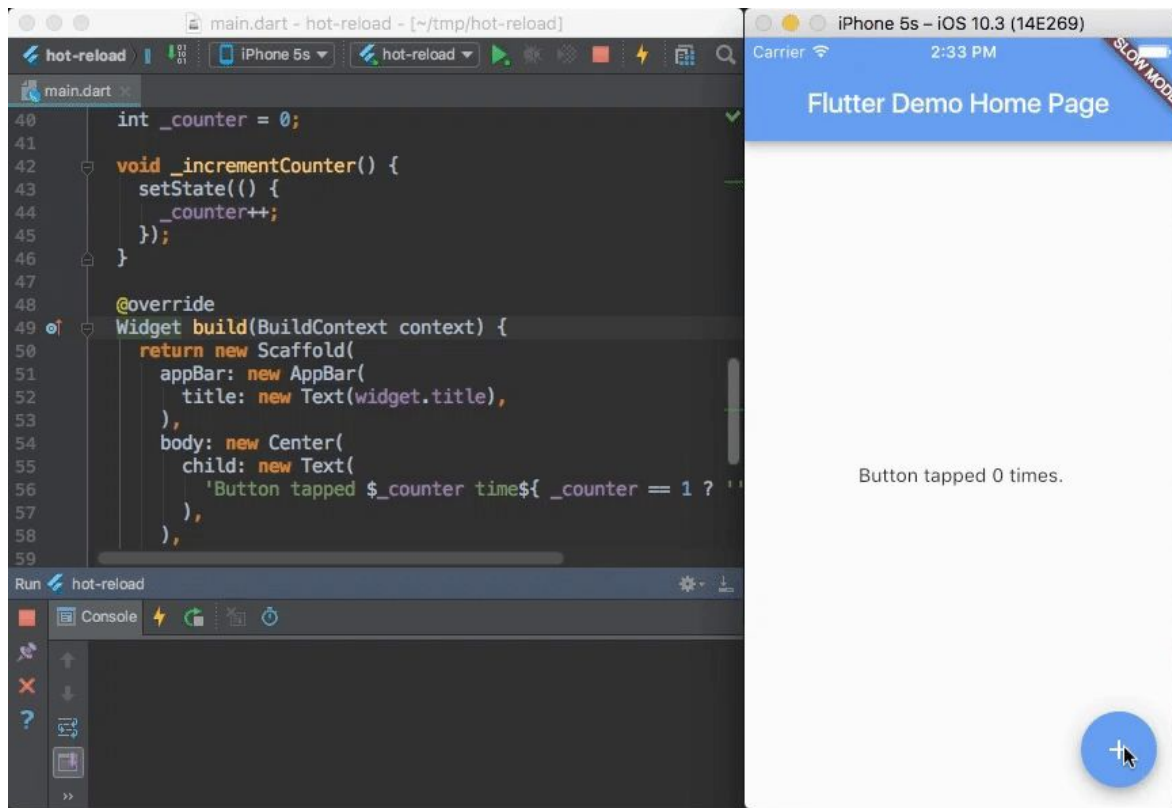
HTML/CSS Analogs in Flutter

```
<div class="greybox">
  Lorem ipsum
</div>
```

```
.greybox {
  background-color: #e0e0e0; /* grey 300 */
  width: 320px;
  height: 240px;
  font: 900 24px Georgia;
}
```

```
var container = new Container( // grey box
  child: new Text(
    "Lorem ipsum",
    style: new TextStyle(
      fontSize: 24.0
      fontWeight: FontWeight.w900,
      fontFamily: "Georgia",
    ),
  ),
  width: 320.0,
  height: 240.0,
  color: Colors.grey[300],
);
```

Hot Reload



No global layout system

```
body: new Center(  
  child: new Text('Centered Text', style: new TextStyle(  
    fontSize: 24.0,  
    fontWeight: FontWeight.w900,  
    fontFamily: "Georgia",  
  ), // TextStyle  
), // Text  
, // Center
```

Local layouts: Every Widget defines its **own** layout. No need to tell the parent that its children are supposed to be centered.

Customizing and extending Widgets

```
class MyHomePage extends StatefulWidget { ...  
}
```

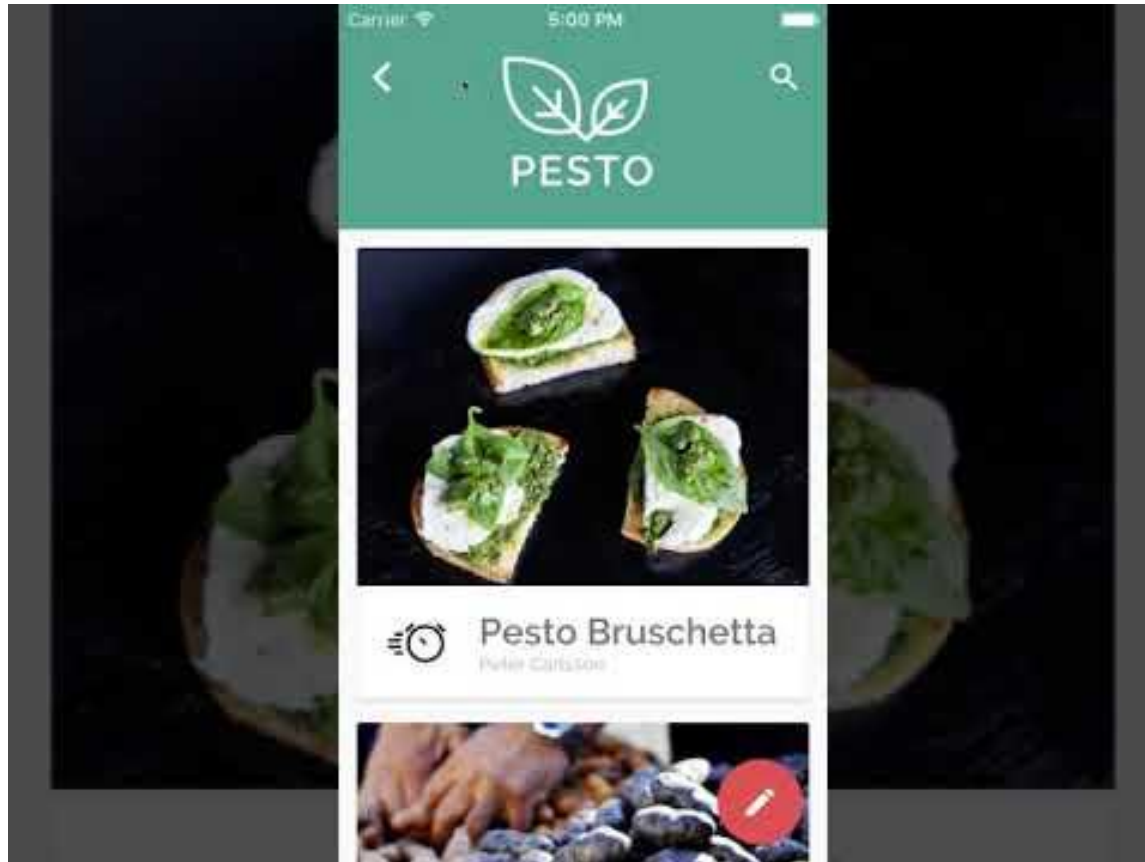
Flutter's Widget system was designed to be easily customizable

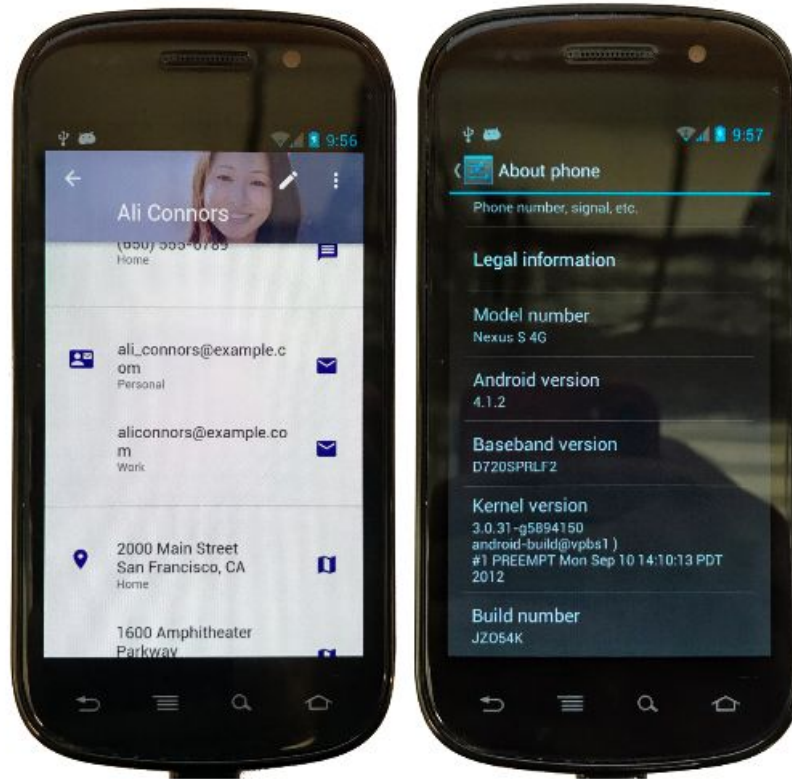
Composition: Widgets are built out of smaller widgets that you can reuse and combine in novel ways to make custom widgets

With Flutter no limit to your imagination.



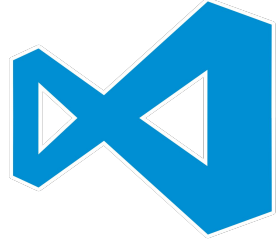
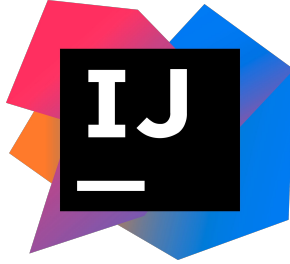
With Flutter no limit to your imagination.



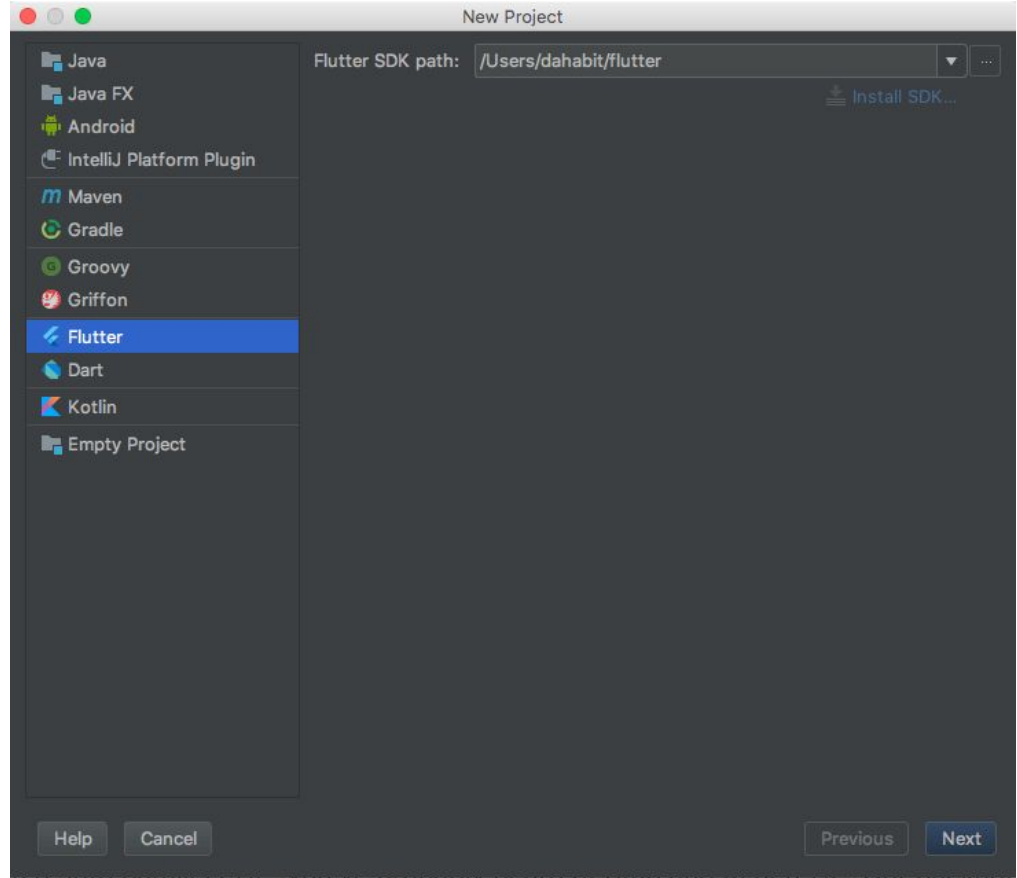
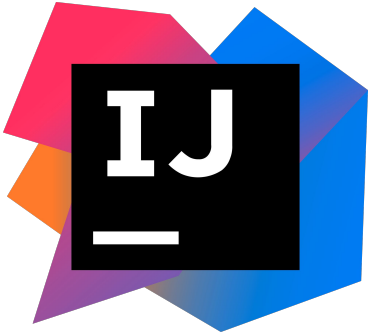


Consistent Material Design (or your design) on phones made way before Material Design existed

IDE Support ?



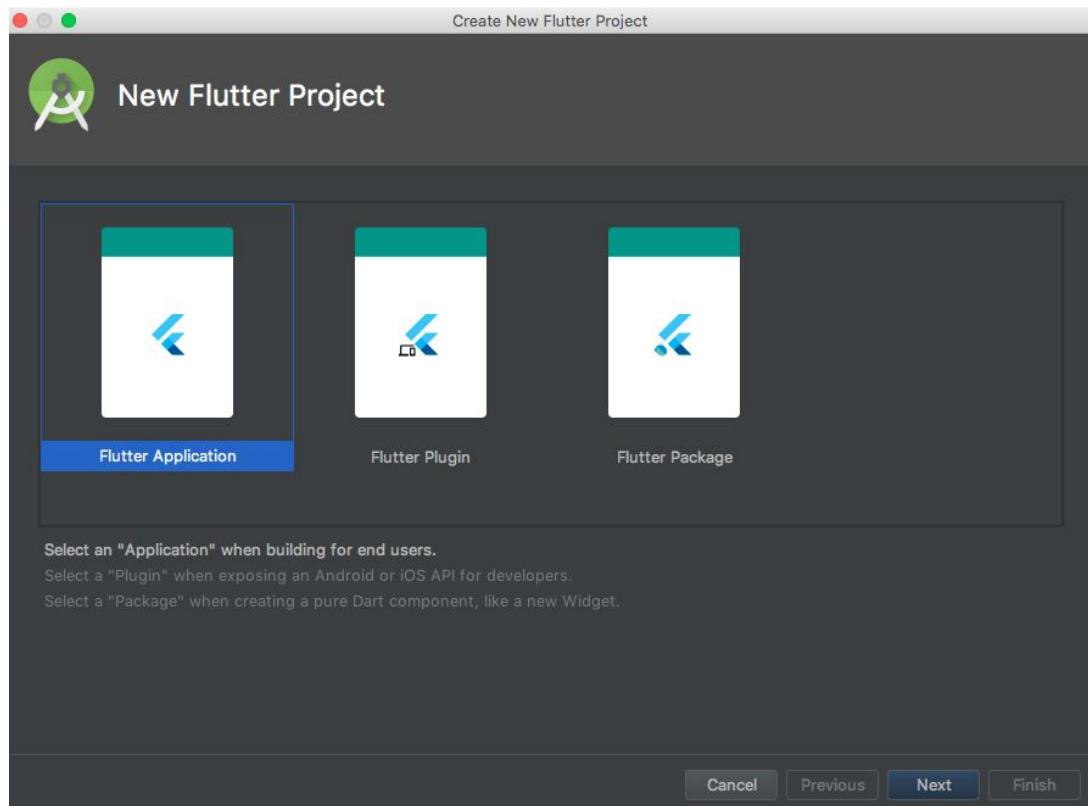
IDE Support ?



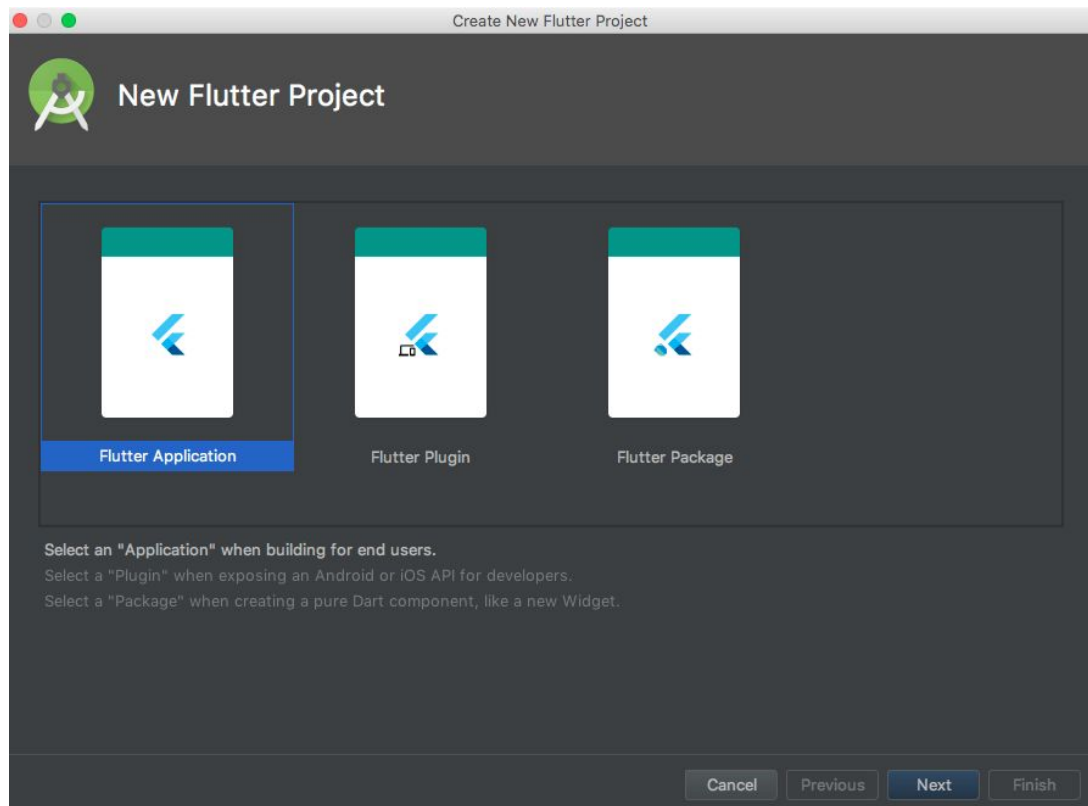
IDE Support ?



IDE Support ?



IDE Support ?



IDE Support ?



Create New Flutter Project

New Flutter Application

Set the package name
Applications and plugins need to generate platform-specific code

Company domain
dahabit.com

Package name
com.dahabit.flutter_app Edit

Platform channel language

- ☒ Include Kotlin support for Android code
- ☒ Include Swift support for iOS code

Cancel Previous Next Finish

Terminal ?

```
$ flutter create demoapp
```

```
Running "flutter packages get" in demoapp... 22.3s

[✓] Flutter is fully installed. (on Mac OS X 10.13.2 17C205, locale en-EG, channel alpha)
[✓] Android toolchain - develop for Android devices is fully installed. (Android SDK 27.0.1)
[✓] iOS toolchain - develop for iOS devices is fully installed. (Xcode 9.2)
[✓] Android Studio is fully installed. (version 3.0)
[✓] IntelliJ IDEA Community Edition is fully installed. (version 2017.3.3)
[-] Connected devices is partially installed; more components are available.

Run "flutter doctor" for information about installing additional components.

All done! In order to run your application, type:

  $ cd demoapp
  $ flutter run

Your main program file is lib/main.dart in the demoapp directory.
```

How To install ?

Flutter installation & setup

[Edit Source](#)[File Issue](#)

This page describes how to prepare your development environment to run Flutter apps on iOS or Android.

Note: *Flutter is an alpha, open-source project. If you're in China, please read [this wiki article](#) first.*

Select Your Operating System -

macOS

Windows

Linux

apps, complete all the tasks marked Required Now in this checklist. The remaining tasks can be deferred until later in the development cycle, when you're ready to test and iterate using a simulator or physical device.

<https://flutter.io/setup/>

Easy Check !

\$ flutter doctor

```
1. dahabit@Ahmeds-MBP: ~ (zsh)
→ ~ flutter doctor
[✓] Flutter (on Mac OS X 10.13.2 17C205, locale en-EG, channel alpha)
    • Flutter at /Users/dahabit/flutter
    • Framework revision 8f65fec5f5 (5 weeks ago), 2017-12-12 09:50:14 -0800
    • Engine revision edaecd8b8
    • Tools Dart version 1.25.0-dev.11.0
    • Engine Dart version 2.0.0-edge.d8ae797298c3a6cf8dc9f4558707bd2672224d3e

[✓] Android toolchain - develop for Android devices (Android SDK 27.0.1)
    • Android SDK at /Users/dahabit/Library/Android/sdk
    • Android NDK location not configured (optional; useful for native profiling support)
    • Platform android-27, build-tools 27.0.1
    • ANDROID_HOME = /Users/dahabit/Library/Android/sdk
    • Java binary at: /Applications/Android Studio.app/Contents/jre/jdk/Contents/Home/bin/java
    • Java version OpenJDK Runtime Environment (build 1.8.0_152-release-915-b08)

[✓] iOS toolchain - develop for iOS devices (Xcode 9.2)
    • Xcode at /Applications/Xcode.app/Contents/Developer
    • Xcode 9.2, Build version 9C40b
    • ios-deploy 1.9.2
    • CocoaPods version 1.3.1

[✓] Android Studio (version 3.0)
    • Android Studio at /Applications/Android Studio.app/Contents
    • Java version OpenJDK Runtime Environment (build 1.8.0_152-release-915-b08)

[✓] IntelliJ IDEA Community Edition (version 2017.2.6)
    • Flutter plugin version 20.0.2
    • Dart plugin version 172.4343.25

[✓] Connected devices
    • iPhone 8 Plus • B5B407CD-80A8-4824-855D-EE43487CSAC8 • ios • iOS 11.2 (simulator)
```


200+

Flutter applications already in the Google Play Store



Getting Started: **Flutter** ▾ **Web & Server** ▾



Flutter Packages

Search Flutter packages



FLUTTER

WEB

ALL

Flutter makes it easy and fast to build beautiful mobile apps
for iOS and Android.

Top Flutter packages

<https://pub.dartlang.org/flutter>

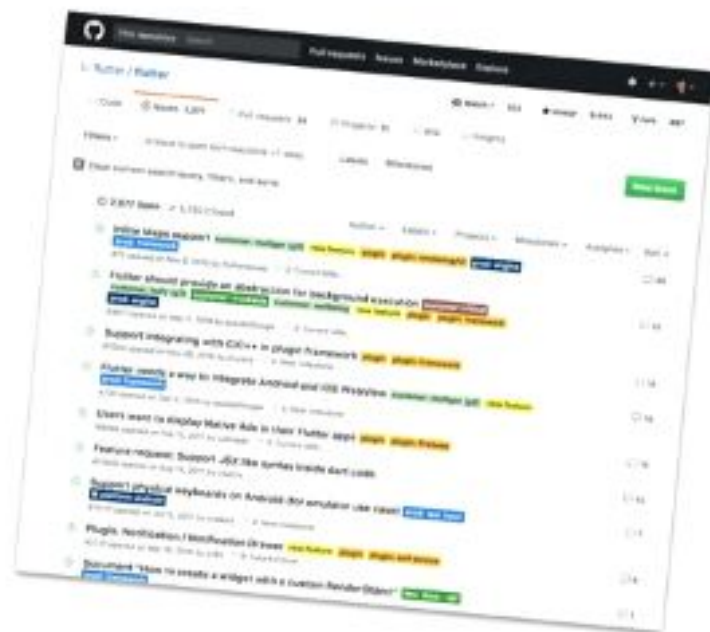
What's happening now ?

- Right-to-left layouts
- Accessibility
- Customized UI
- Background execution
- Firebase integration
- New pub site
- iPhone X support
- Animated GIF support
- Video
- Widget inspector
- Android Studio support

Flutter currently is in Alpha

What next ?

- Inline maps
- Inline webview
- Charts
- Native ads
- Continued accessibility work
- More Firebase integrations
- Background Dart execution on iOS
- Remove LGPL from engine
- Embedding Flutter widgets into an existing app
- Better profiling support
- Dart 2 new language features



github.com/flutter/flutter/milestones

Demo

Question?



Google Flutter

and why does it matter

By
Ahmed Abu Eldahab



/FlutterEgypt



/FlutterEgypt