



Building Beautiful Apps using

Google Flutter

By

Ahmed Abu Eldahab



/FlutterEgypt



/FlutterEgypt

About Us

FlutterEgypt

- We are a public group for anyone interested in Mobile Development using Google Flutter which is new SDK framework from Google to Build applications on IOS & Android with the same code base.
- Our main target to help Arabs & Egyptians developers community to know more about Google Flutter



/FlutterEgypt

About Us

FlutterEgypt

- World first Flutter Meetup community (our first meetup was 27th january 2018)
- World first Flutter community that join **Together with Google Developers (30th april 2018)**



meetup

/FlutterEgypt

About Me



My name is Ahmed Abu Eldahab

- Co-Founder & CTO of Savvy Arabia
- Founder of FlutterEgypt & Flutterbus Organizer
- I wrote my first line of code 22 years ago (1995).
- I started teaching programming since (2000).
- I have 15+ years experience with software (Web - Mobile - Desktop)



/Dahabdev



/Dahabdev



/Dahabit

Who is the first programmer ever?



Ada Lovelace



The first programmer of all time

- Born in London on December 10, 1815
- Died 27 November 1852 (aged 36)
- In 1953, more than a century after her death, Ada Lovelace's notes on Babbage's Analytical Engine were republished. The engine has now been recognised as an early model for a computer and her notes as a description of a computer and software.

Ada Lovelace

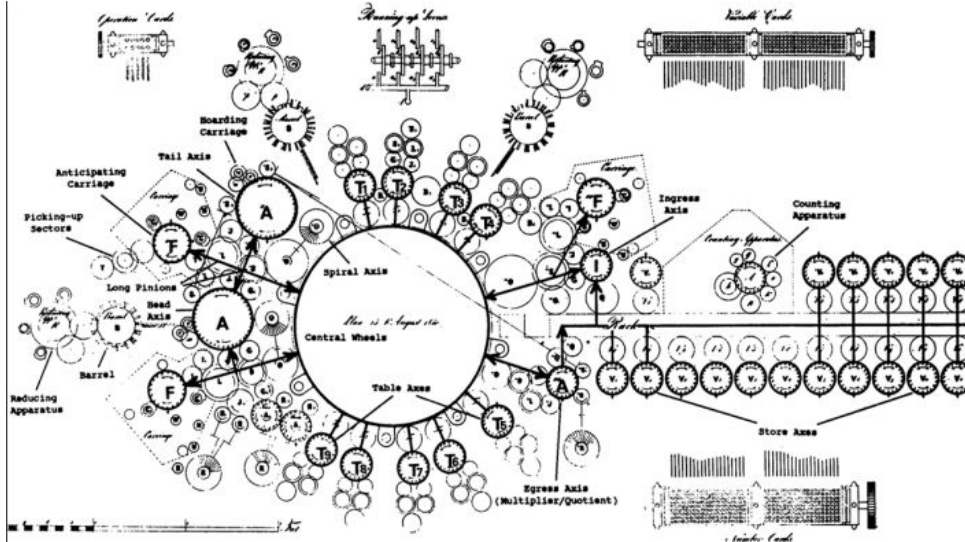


Diagram for the computation by the Engine of the Numbers of Bernoulli. See Note G. (page 722 et seq.)

Number of Operations.	Variables used and upon.	Variables receiving results.	Indication of change in the value in any Variable.	Statement of Results.	Data.												Working Variables.				Result Variables.			
					V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	V_{16}	V_{17}	V_{18}		
1	$X = V_1 \times V_2$	$V_3 = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
2	$V_4 = V_1 \times V_2$	$V_4 = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
3	$V_5 = V_1 \times V_2$	$V_5 = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4	$V_6 = V_1 \times V_2$	$V_6 = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5	$V_7 = V_1 \times V_2$	$V_7 = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
6	$V_8 = V_1 \times V_2$	$V_8 = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7	$V_9 = V_1 \times V_2$	$V_9 = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8	$V_{10} = V_1 \times V_2$	$V_{10} = V_1$		$2x = 0 = 2$	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
9	$V_{11} = V_1 \times V_2$	$V_{11} = V_1$		$2x = A_1 = 2$	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
10	$X = V_3 \times V_4$	$V_{12} = V_1$		$\frac{2x}{2} = B_1 A_1$	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
11	$V_{13} = V_1 \times V_2$	$V_{13} = V_1$		$\frac{1}{2} \frac{2x-1}{2x+1} = B_2$	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
12	$V_{14} = V_1 \times V_2$	$V_{14} = V_1$		$x = 2(2-2) = 0$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
13	$V_{15} = V_1 \times V_2$	$V_{15} = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
14	$V_{16} = V_1 \times V_2$	$V_{16} = V_1$		$2x = 1 - 3$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
15	$V_{17} = V_1 \times V_2$	$V_{17} = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
16	$V_{18} = V_1 \times V_2$	$V_{18} = V_1$		$\frac{2x-1}{2}$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
17	$V_{19} = V_1 \times V_2$	$V_{19} = V_1$		$\frac{2x-1}{2}$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
18	$V_{20} = V_1 \times V_2$	$V_{20} = V_1$		$2x = 2$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
19	$V_{21} = V_1 \times V_2$	$V_{21} = V_1$		$2x = 1 - 4$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
20	$V_{22} = V_1 \times V_2$	$V_{22} = V_1$		$\frac{2x-2}{2}$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
21	$V_{23} = V_1 \times V_2$	$V_{23} = V_1$		$\frac{2x-1}{2} \frac{2x-2}{2} = A_1$	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
22	$X = V_3 \times V_4$	$V_{24} = V_1$		$\frac{2x-1}{2} \frac{2x-2}{2} = B_2 A_1$	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
23	$V_{25} = V_1 \times V_2$	$V_{25} = V_1$		$\frac{1}{2} \frac{2x-1}{2x+1} = B_2$	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
24	$V_{26} = V_1 \times V_2$	$V_{26} = V_1$		$x = 3(1-1) = 0$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
25	$V_{27} = V_1 \times V_2$	$V_{27} = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Here follows a repetition of Operations thirteen to twenty-three.

24	$V_{28} = V_1 \times V_2$	$V_{28} = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	$V_{29} = V_1 \times V_2$	$V_{29} = V_1$		$x = 1 - 1 = 0$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	$V_{30} = V_1 \times V_2$	$V_{30} = V_1$		$2x = 1$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ada Lovelace's notes were labelled alphabetically from A to G

Who is the first Modern Programmer ?



World War II

World War II



- World War II - From 1939 to 1945
- Hut 8 was a section in the Government Code and Cypher School (GC&CS) at Bletchley Park.
- Hut 8 was responsible for German naval cryptanalysis.
- **Enigma** was invented by the German engineer Arthur Scherbius at the end of World War I
- The Enigma machines were a series of electro-mechanical rotor cipher machines developed to protect commercial, diplomatic and military communication.

Alan Turing



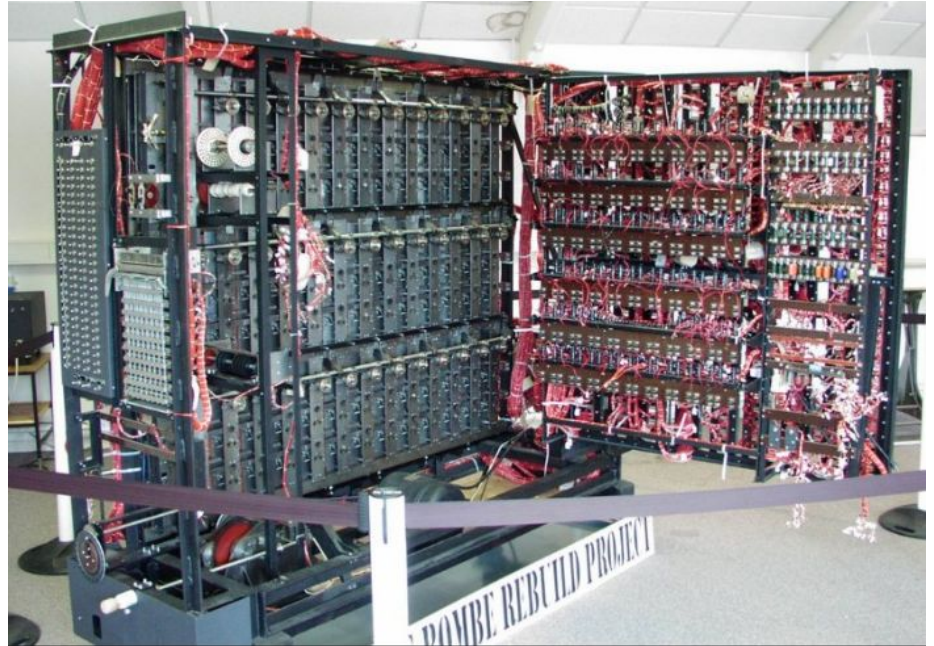
The first software Developer

- Born in London on 23 June 1912
- Died 7 June 1954 (aged 41)
- Provided a formalisation of the concepts of algorithm and computation with the Turing machine.
- During the Second World War, Turing worked for the Government Code and Cypher School (GC&CS).
- He invented **Turing machine** (1936) which is a mathematical model of computation
- There is a movie about his life called "**The Imitation Game**"

Alan Turing



Enigma machine



Turing machine

Mobile Platforms



Mobile Platforms



Mobile Platforms



Mobile Platforms



Mobile Platforms



IOS



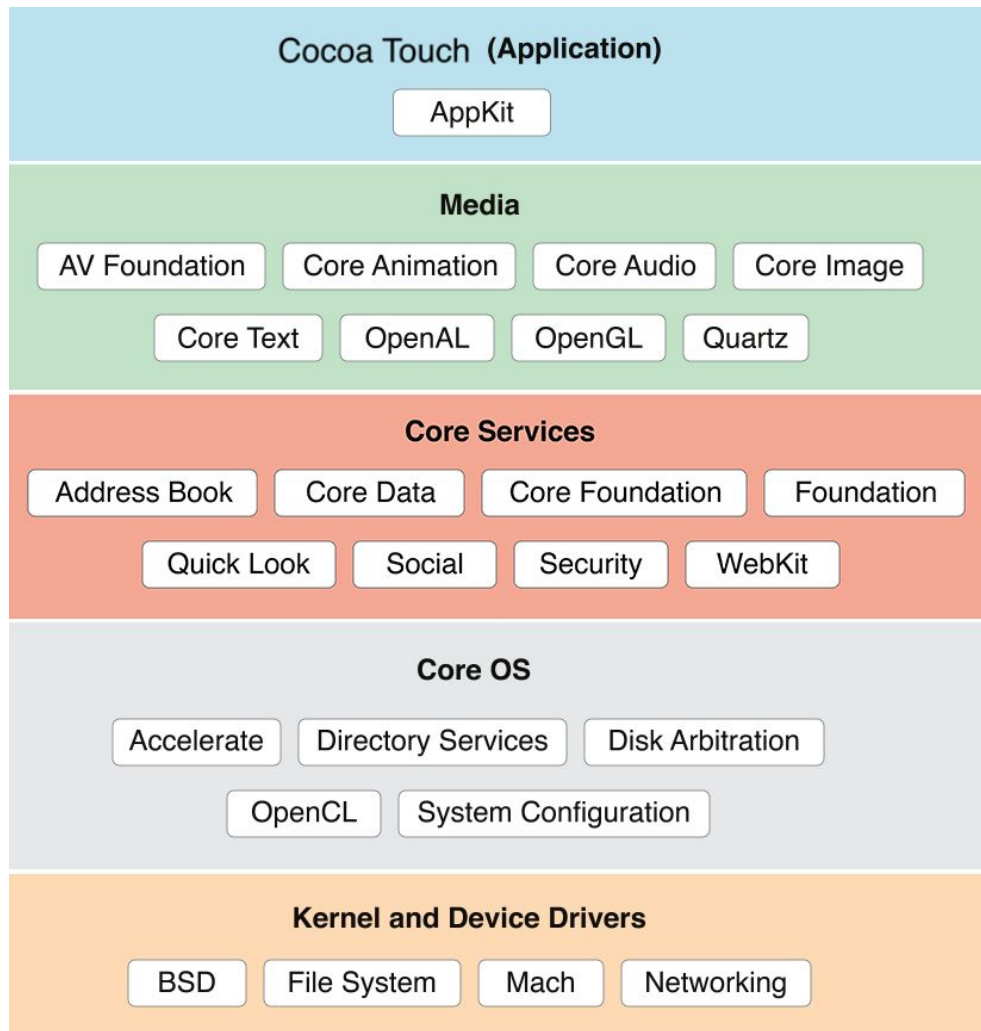
Cupertino Widget

Core Services & Media

Core OS

Kernel and Device Drivers

IOS



Android



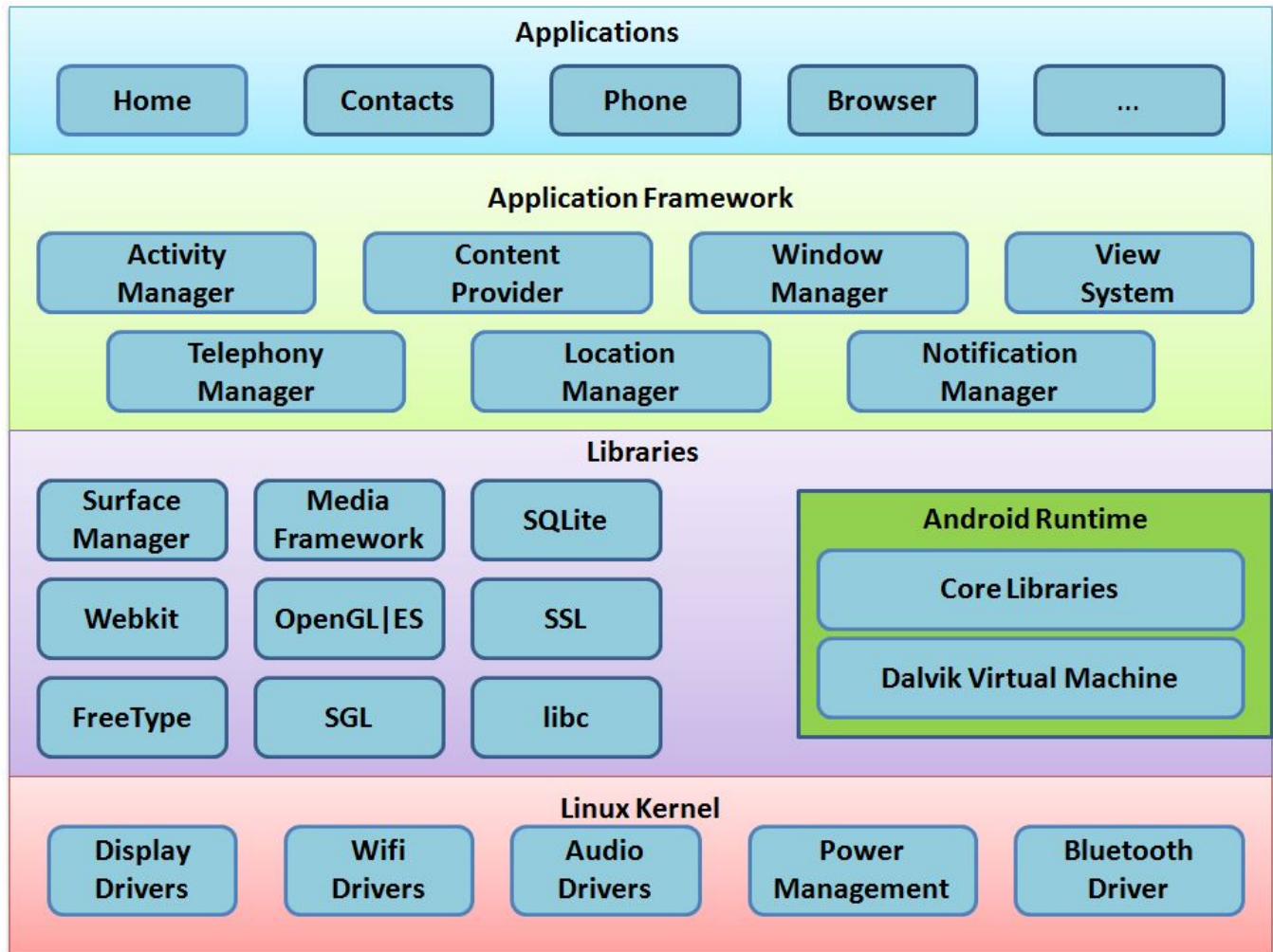
Material Design Widgets

Applications & Framework

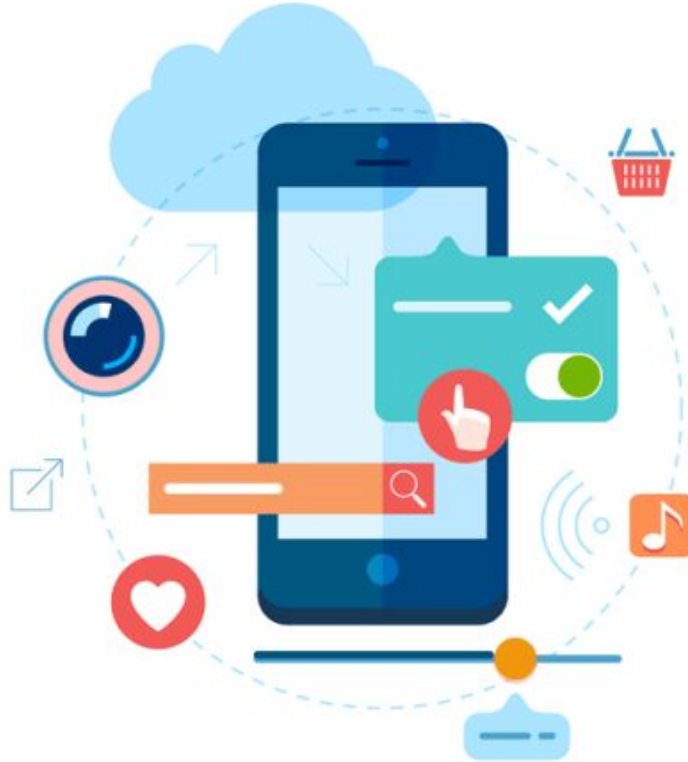
Libraries & Run Time

Linux Kernel and Device Drivers

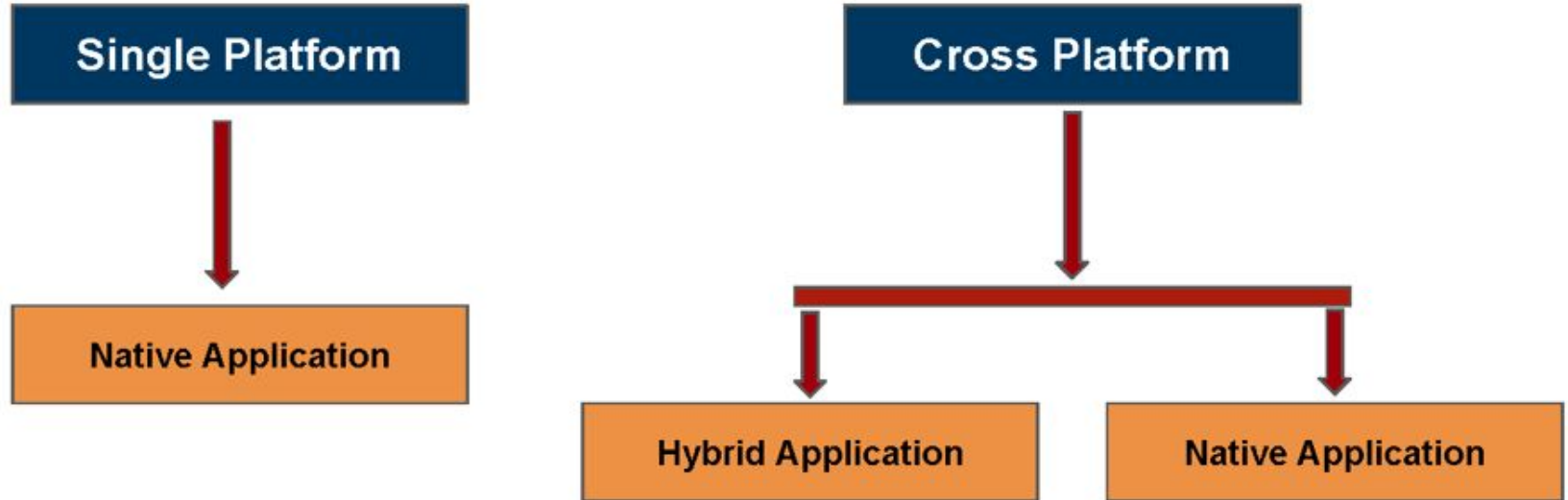
Android



Mobile Development Approaches



Mobile Development Approaches



Native Approach (Single Platform)



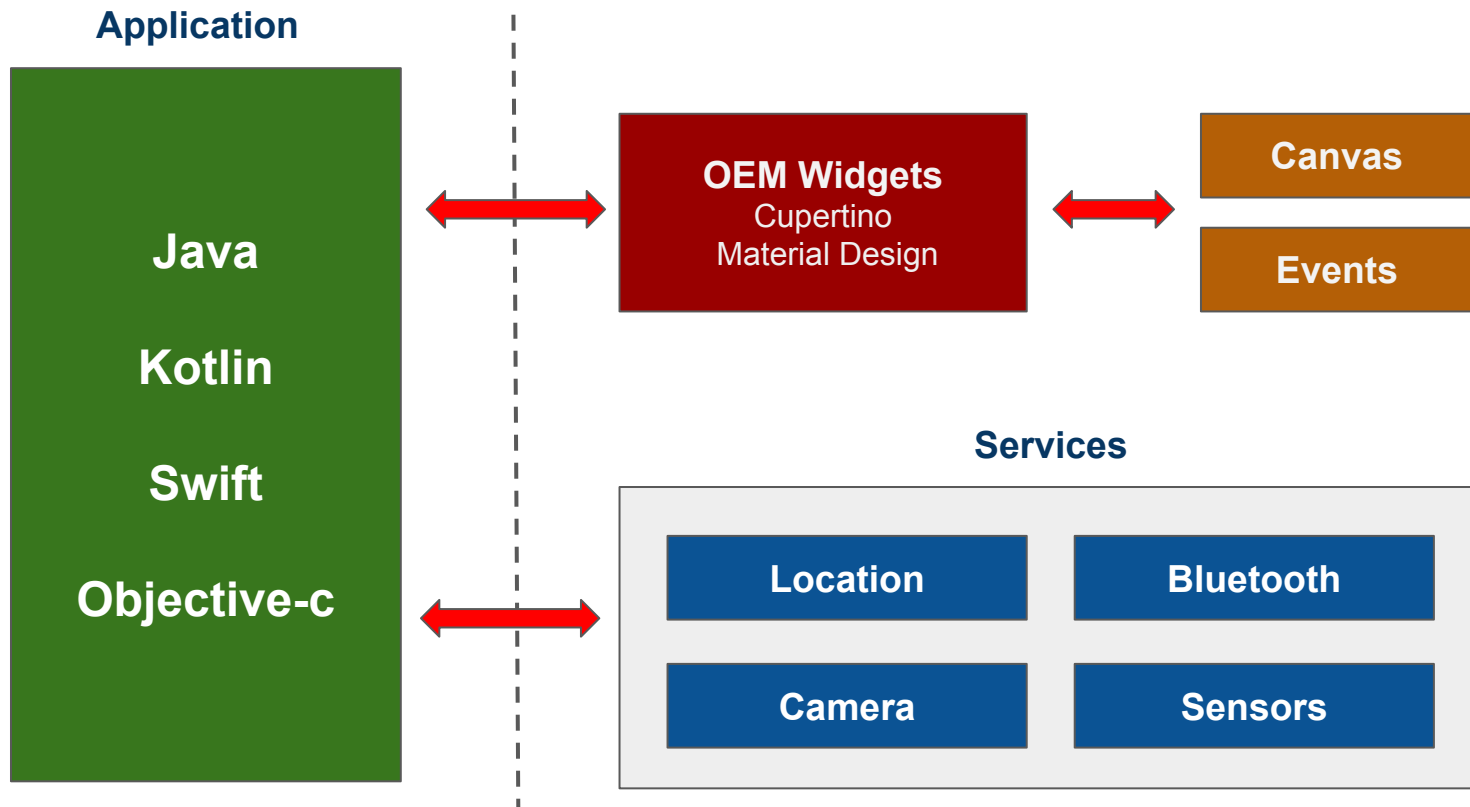
Swift



Kotlin



OEM SDKs



Hybrid Approach



APACHE
CORDOVA™

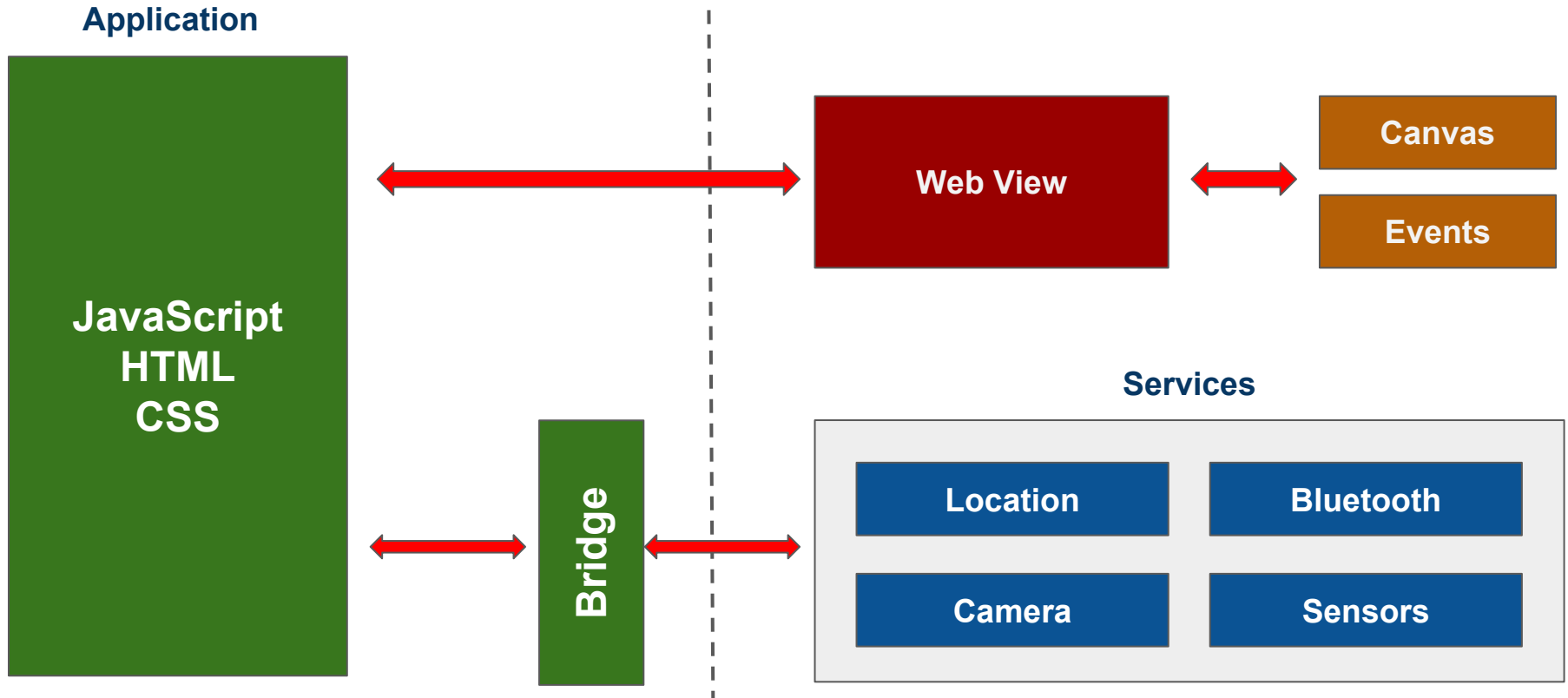


Phone**Gap**



ionic

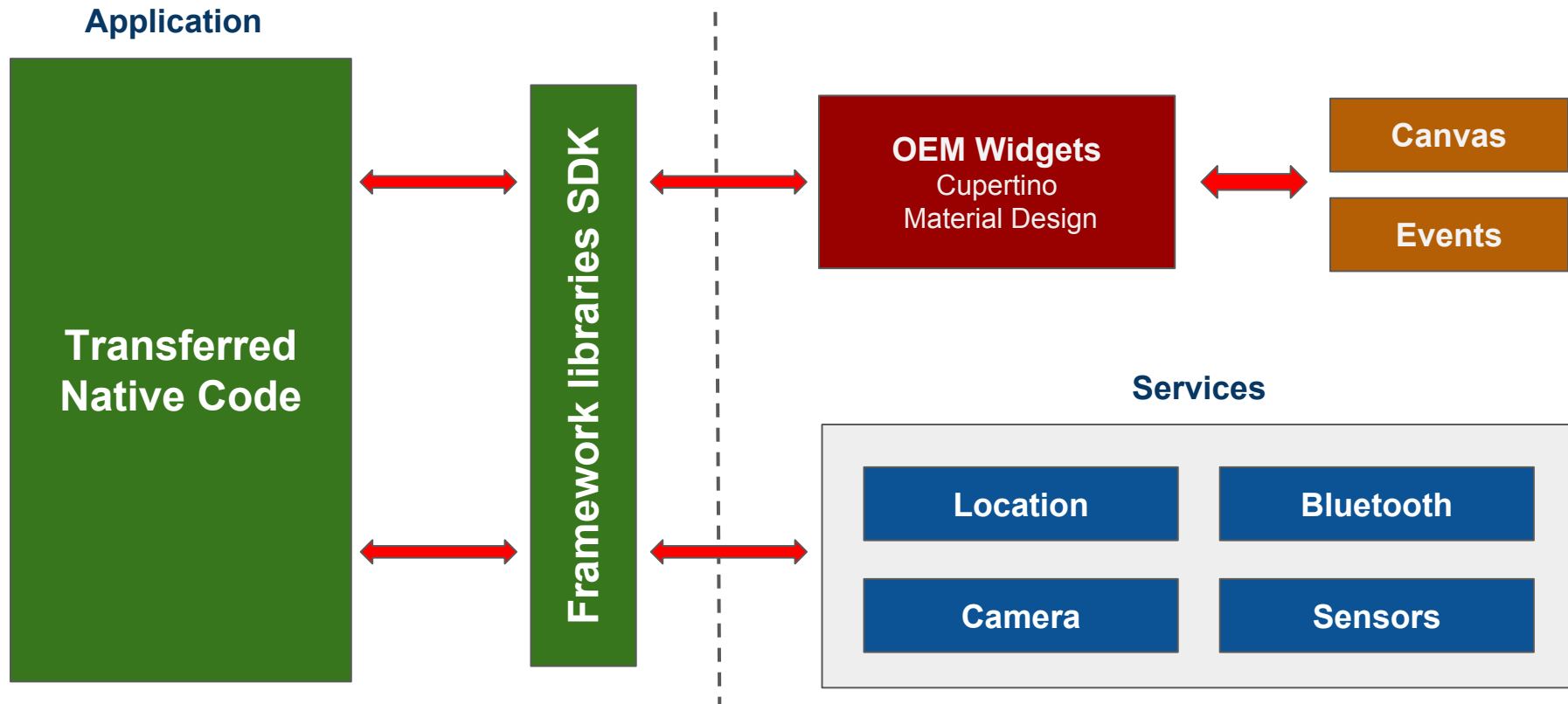
Hybrid Approach



Cross-Platform Approach



Cross-Platform Approach



Cross-Platform Approach

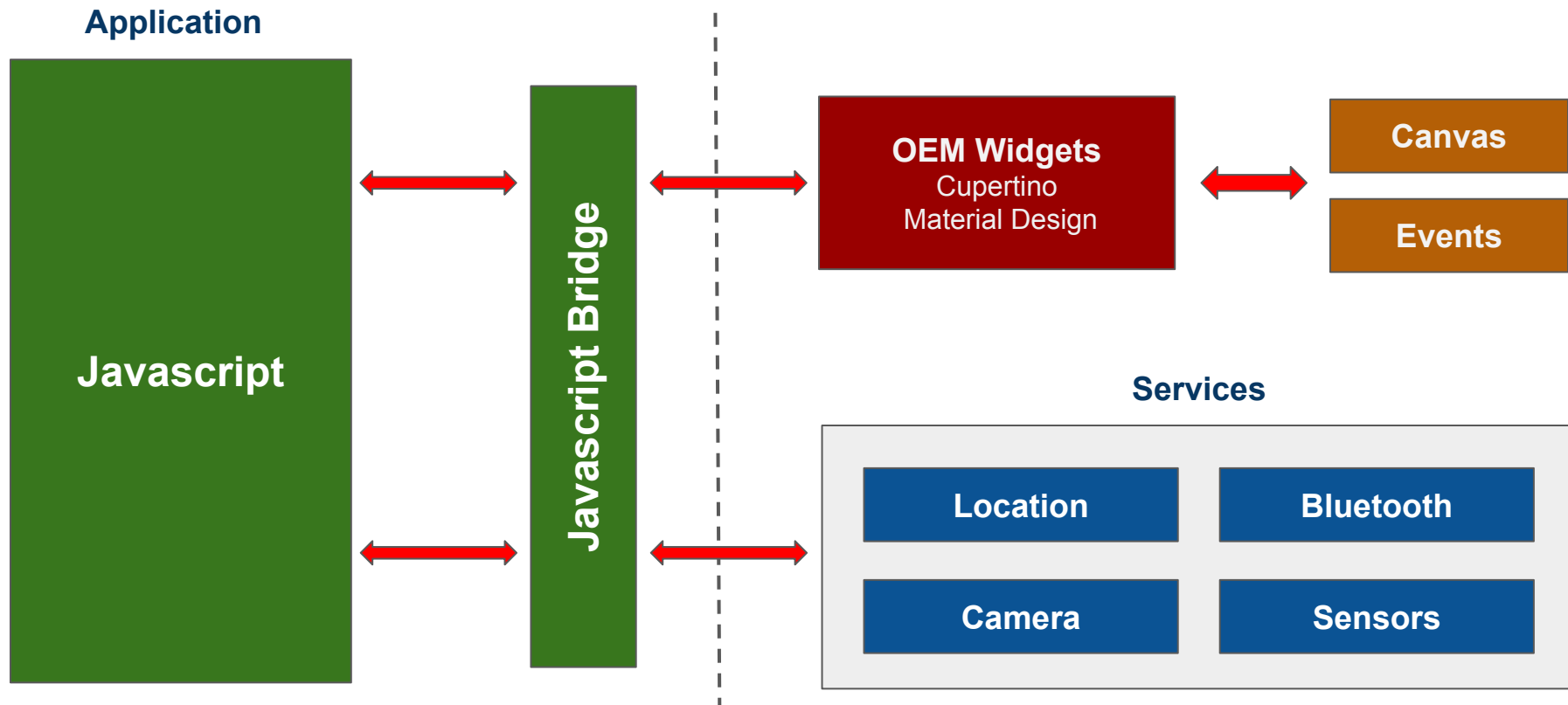


JavaScript



JavaScript

Reactive Views



Mobile Development Approaches



APACHE
CORDOVA™



Phone**Gap**



JavaScript



Xamarin

C#

JavaScript



appcelerator®

JavaScript

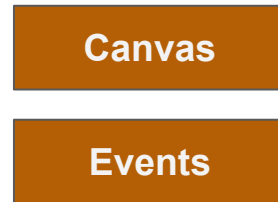
Cross-Platform Approach



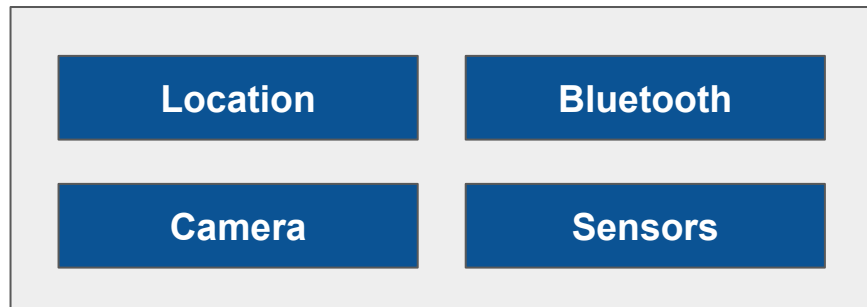
Google Flutter

Flutter Approach

Application



Services



So what is Flutter ?



Flutter is the next step in
App development

- ✓ **Speed and performance**
Fast , smooth performance
- ✓ **Flexibility**
Customize anything - Brand
first design
- ✓ **Native look and feel**
Familiarity , ease of use
- ✓ **Rapid Development**
Easy to learn , predictable



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?





Dart

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, strong typing (Dart 2).

Dart What is Dart?

- Language and Libraries
- Packages manager <https://pub.dartlang.org/>
- Virtual machine
- Compile to Javascript `dart2js`



Batteries included



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 for 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. The organization's profile section displays 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' and 'Language'. A repository titled 'third_party-llvm' is listed with a green commit indicator, 4 stars, 4 forks, and a note that it was updated 5 minutes ago. A green line graph is visible next to the repository. A pink rectangular box highlights the 'Top languages' section, which lists C++ (pink dot), C (black dot), Go (blue dot), Dart (teal dot), and Python (blue dot).

This organization Search Pull requests Issues Marketplace Explore

 **Fuchsia** ⓘ
Pink + Purple == Fuchsia (a new Operating System)
#fuchsia on freenode.net <https://fuchsia.googlesource.com/>

Repositories 223 People 12

Search repositories... Type: All Language: All

third_party-llvm
● LLVM ★ 4 🍴 4 Updated 5 minutes ago

Top languages
● C++ ● C ● Go ● Dart ● Python

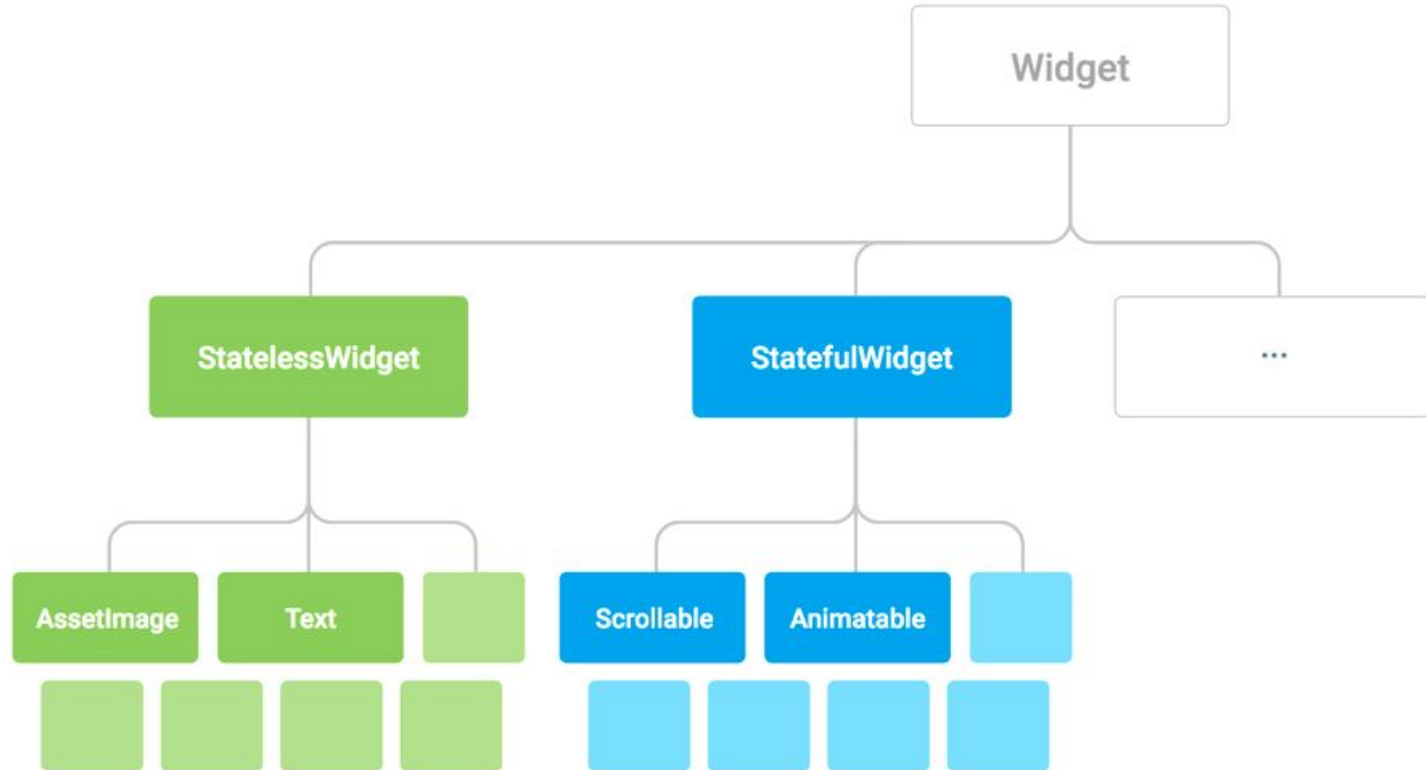
<https://github.com/fuchsia-mirror/>

How Flutter works ?



Flutter

Everything is a Widget



Everything is a Widget

App Widget

Material Widget

Scaffold Widget

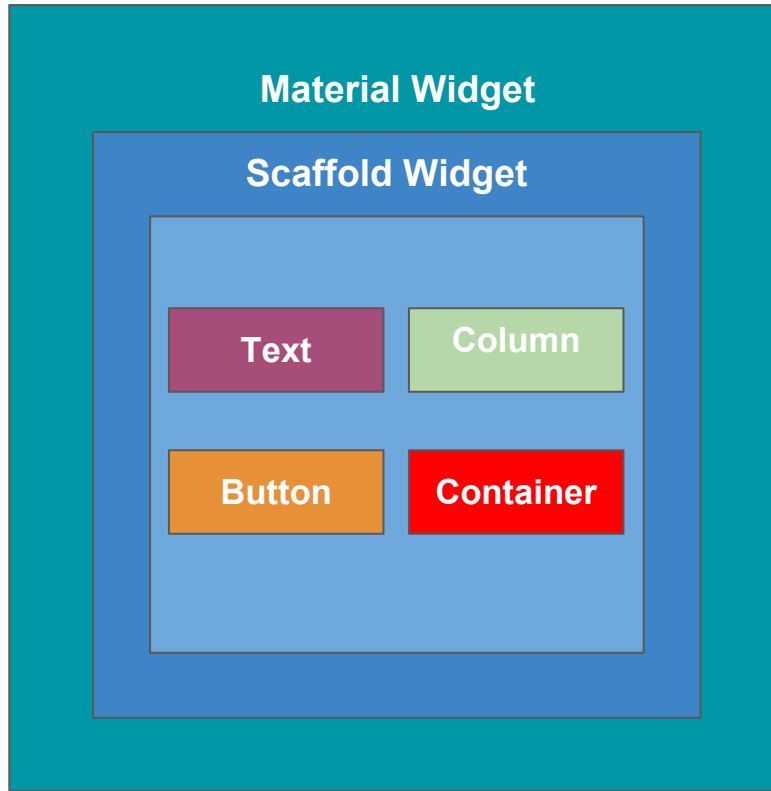
Text

Column

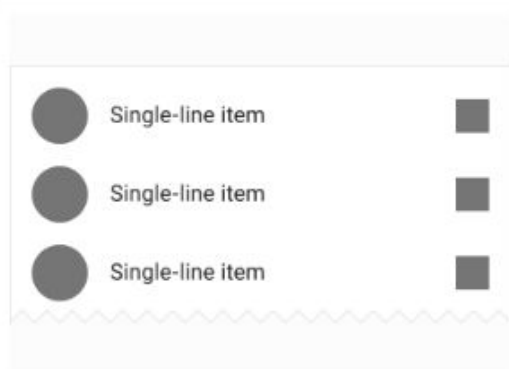
Button

Container

Render Tree



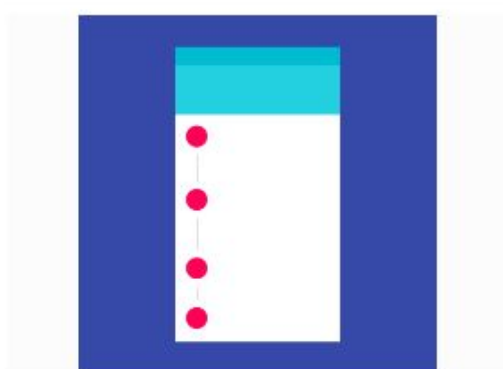
Layout



ListTile

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

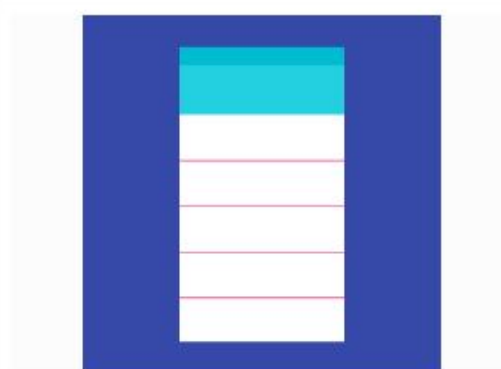
[Documentation](#)



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/>

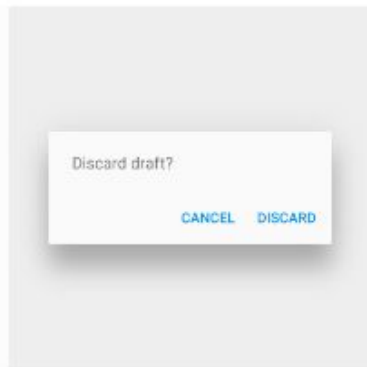
Dialogs, alerts, and panels



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...

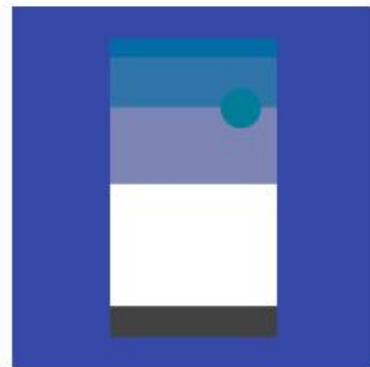
[Documentation](#)



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](#)

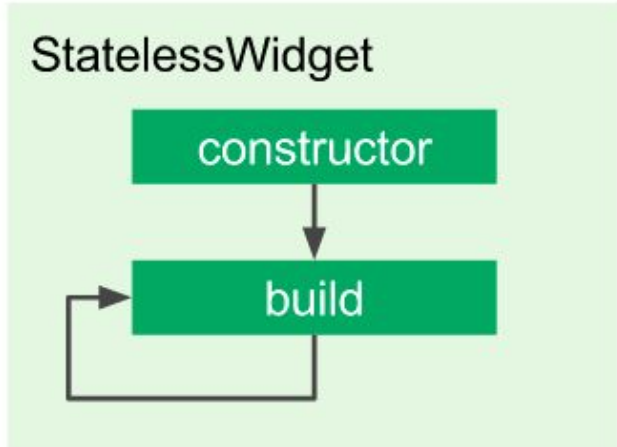
Async

Async patterns to your Flutter application.

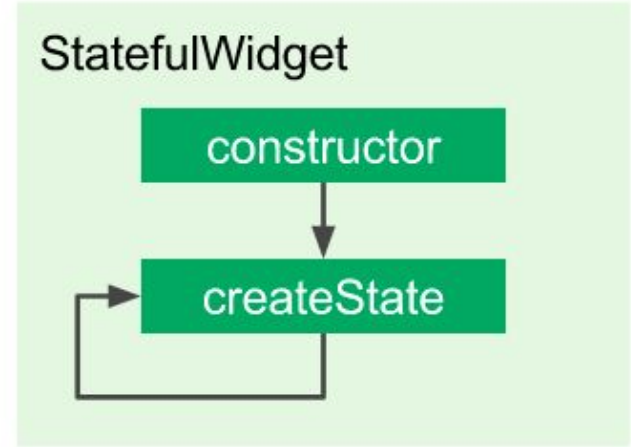
[VISIT](#)

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

StatefulWidget vs. StatelessWidget

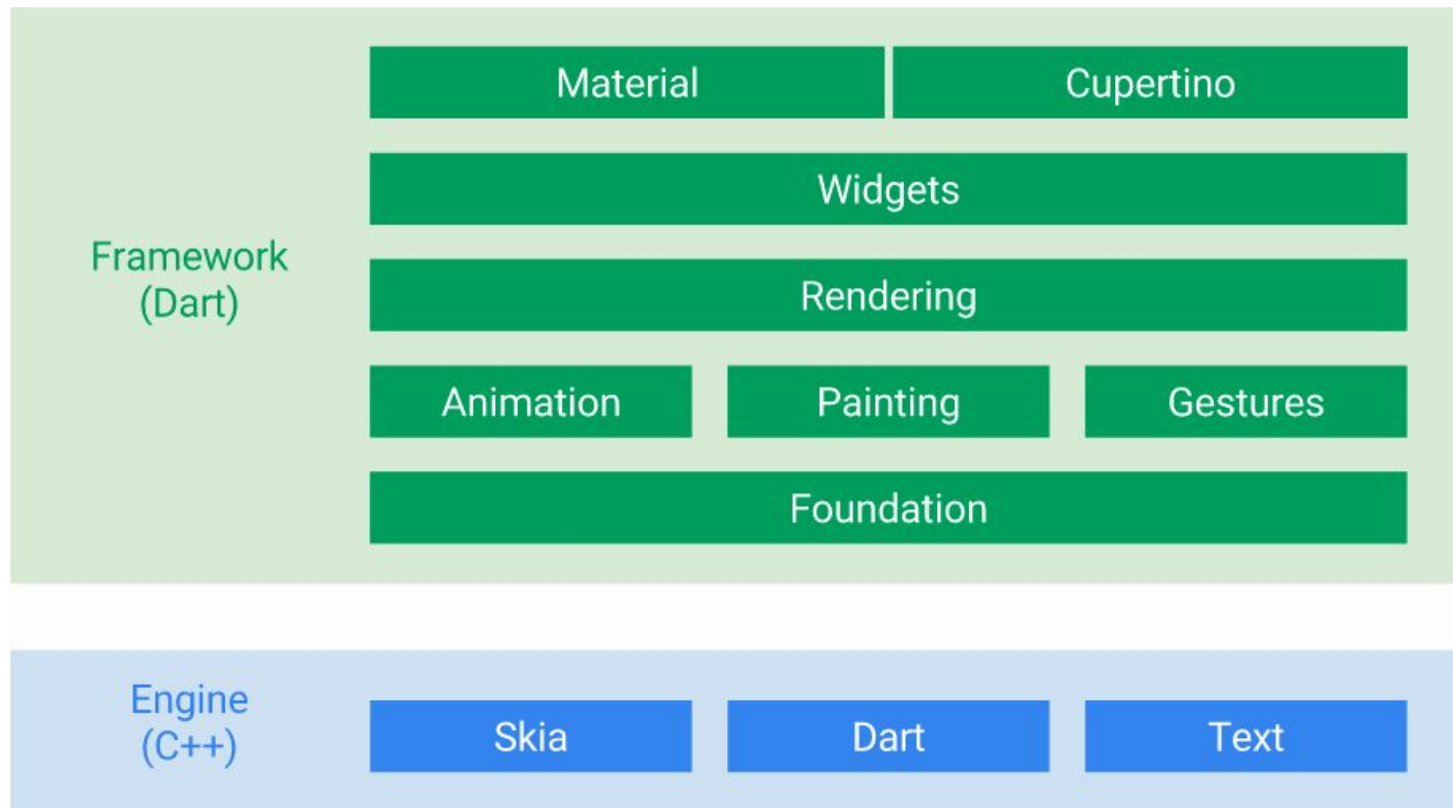


A single StatelessWidget can build in many different BuildContexts

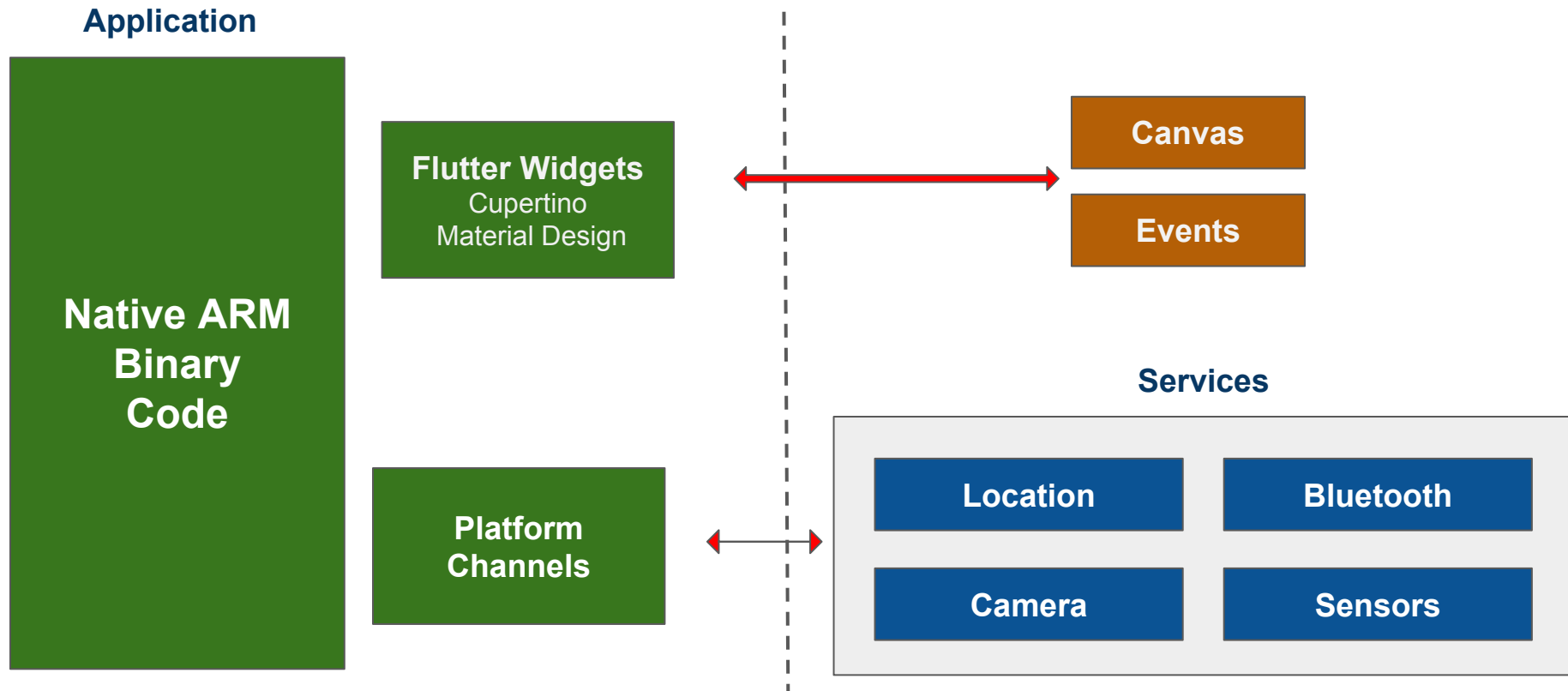


A StatefulWidget creates a new State object for each BuildContext

Flutter Architecture



Flutter Approach

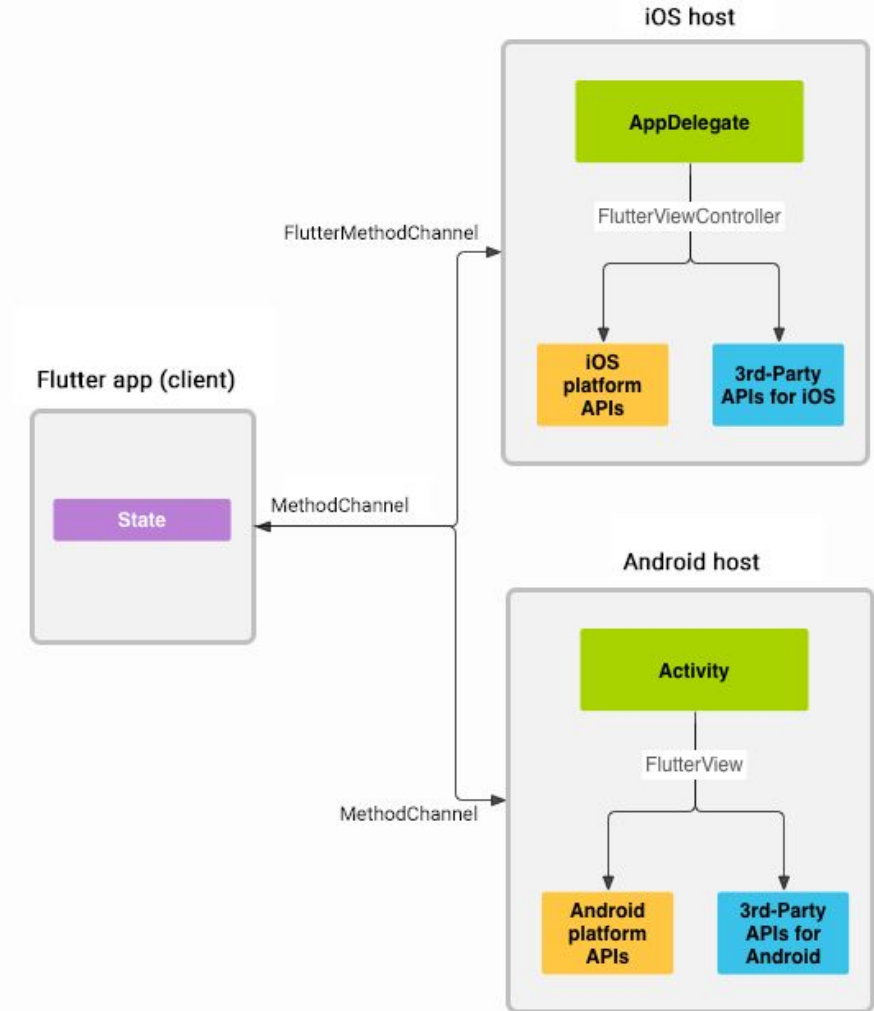


Platform channels



Flutter

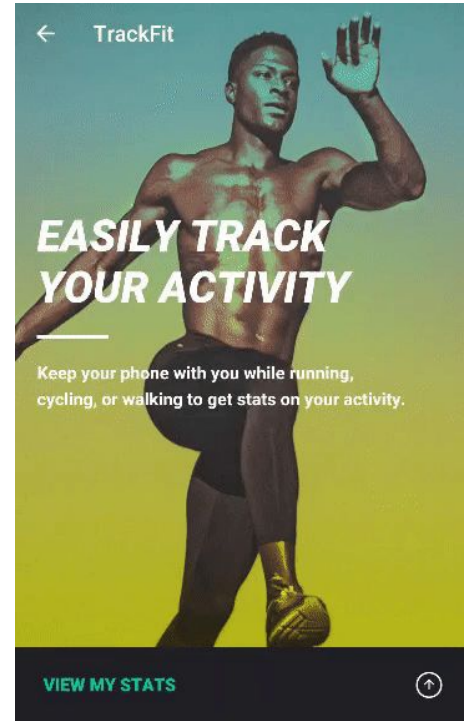
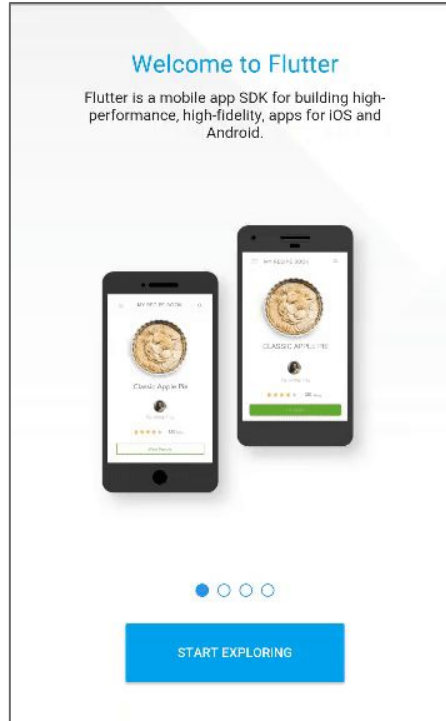
<https://flutter.io/platform-channels/>



What's make Flutter unique ?



Great looking and fast Widgets



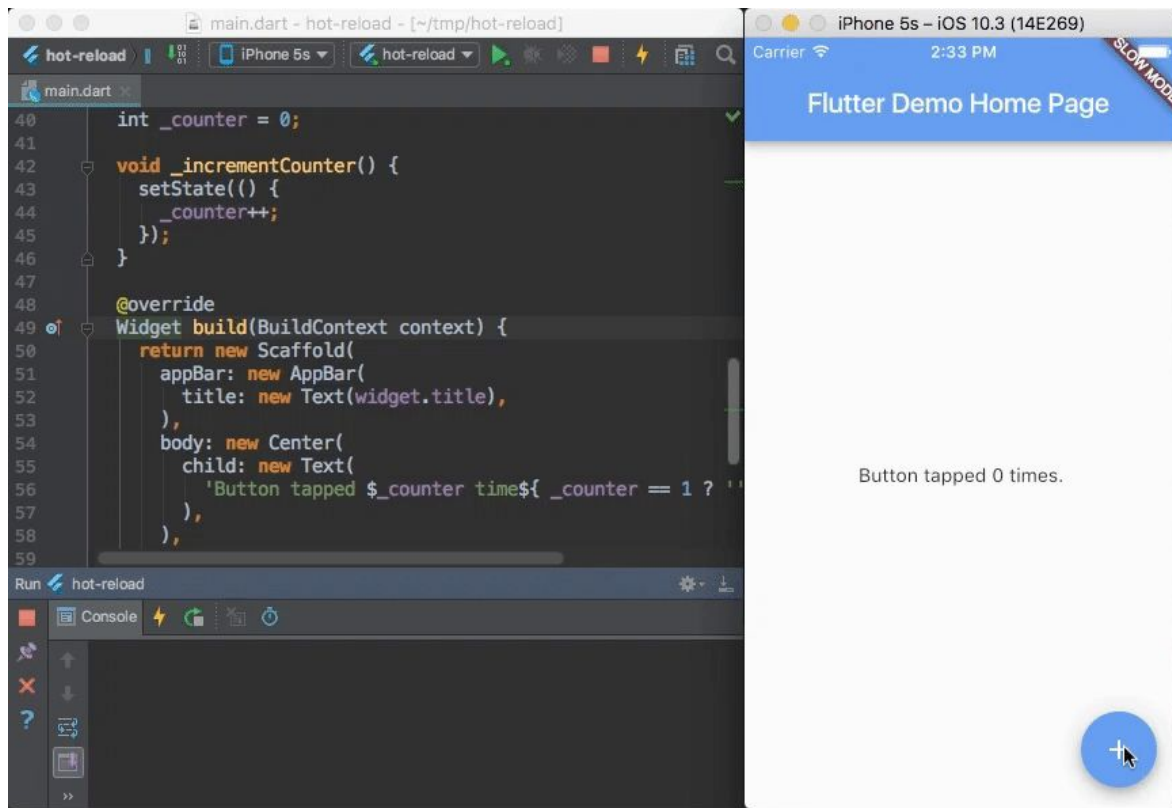
HTML/CSS Analogs in Flutter

```
<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],
);
```

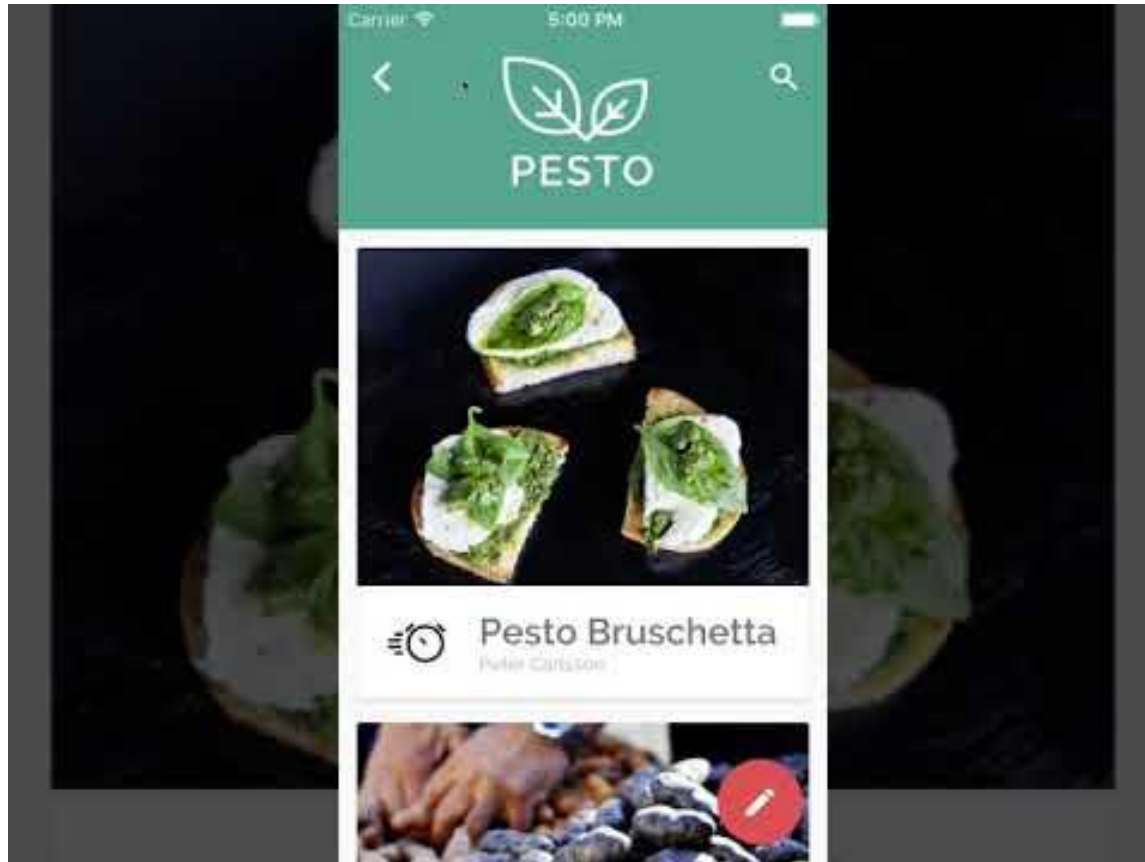
Hot Reload

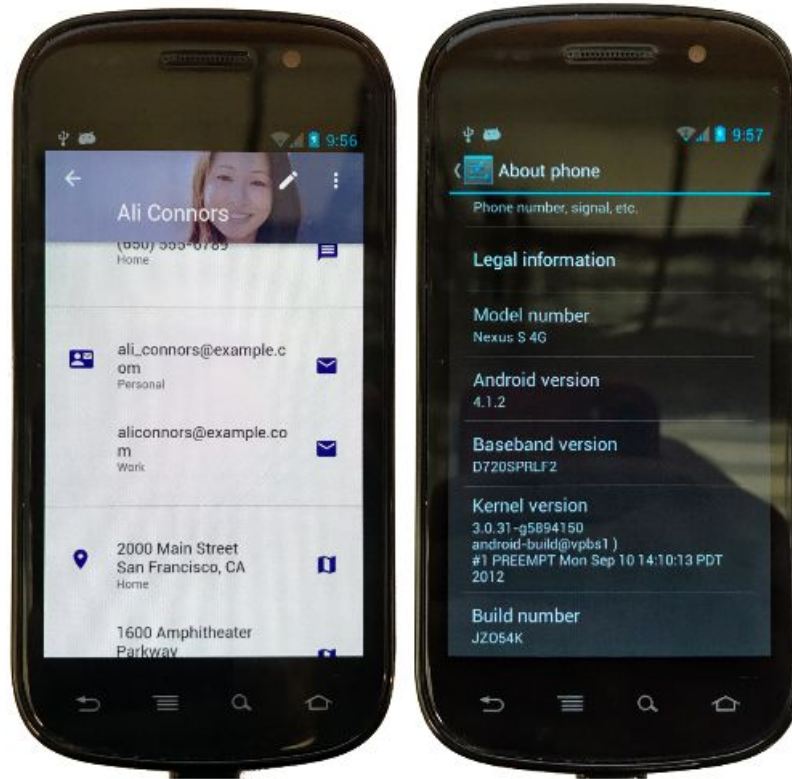


With Flutter no limit to your imagination.



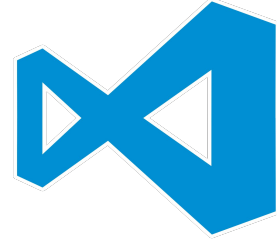
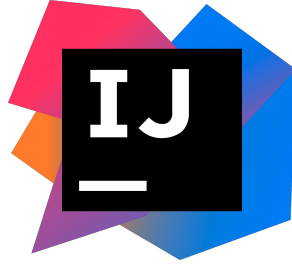
With Flutter no limit to your imagination.



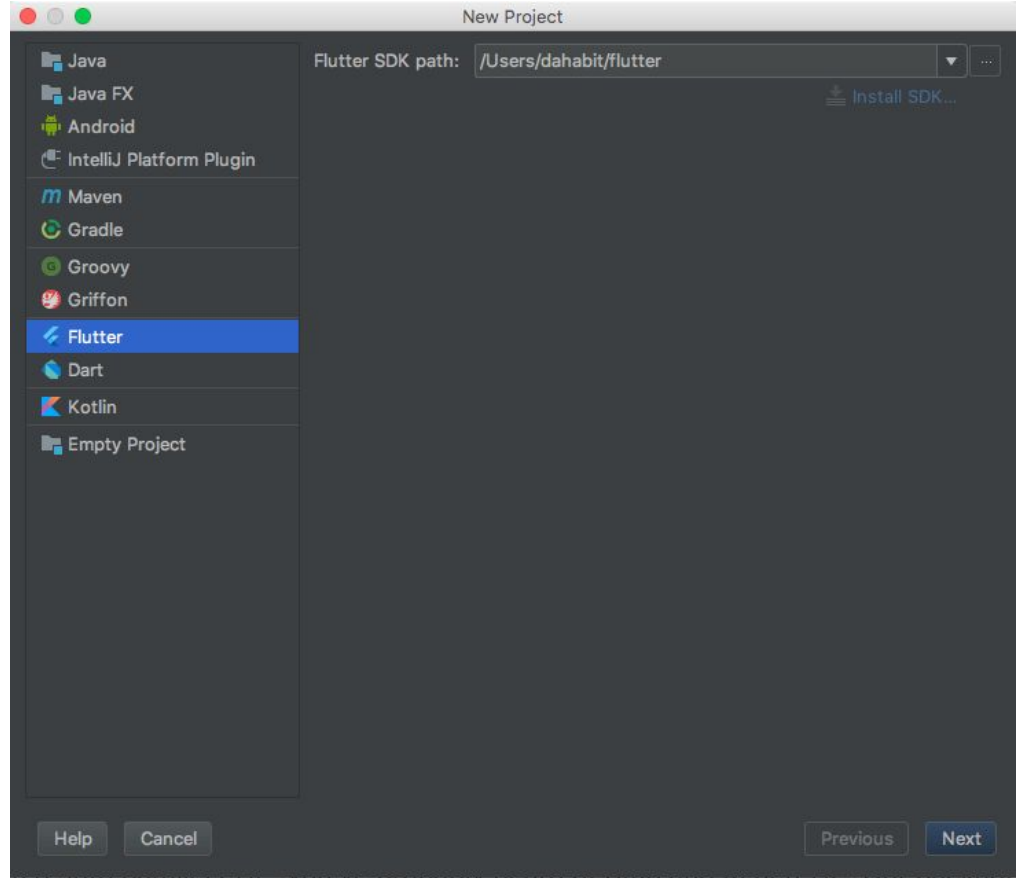
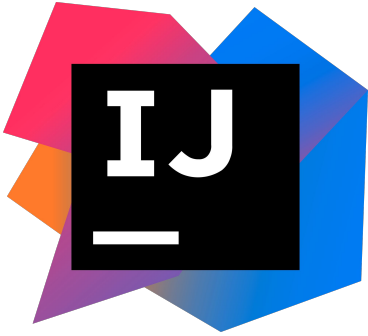


Consistent Material Design (or your design) on phones made way before Material Design existed

IDE Support ?



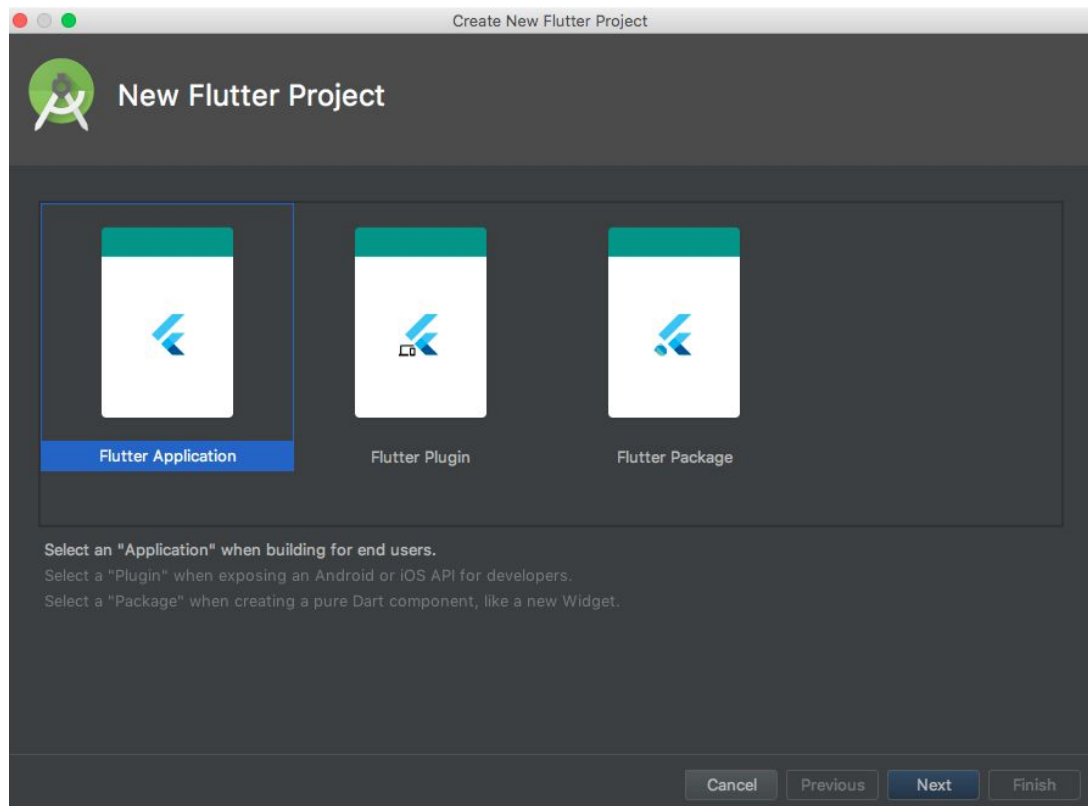
IDE Support ?



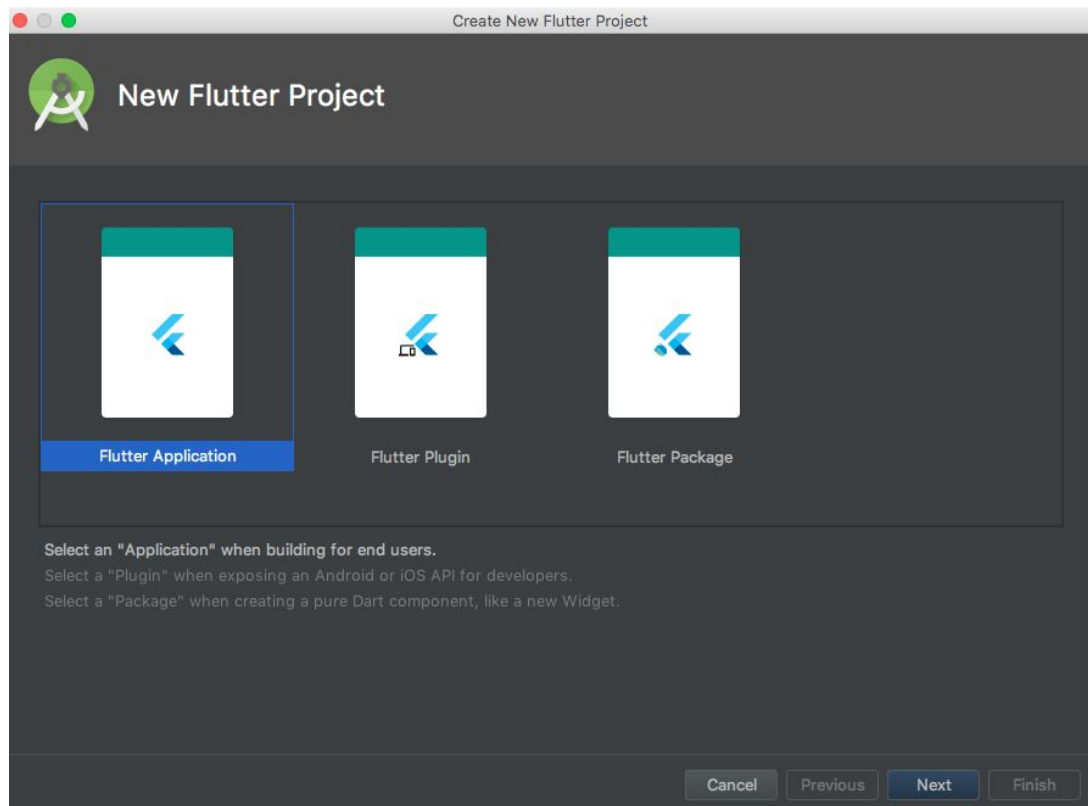
IDE Support ?



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)
```



Flutter

200+

Flutter applications already in the Google Play Store



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



Flutter Packages

Search Flutter packages



FLUTTER

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

Top Flutter packages

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

Mobile Development Approaches



Google Flutter
Dart



APACHE
CORDOVA™



PhoneGap



ionic



Xamarin

C#



JavaScript



JavaScript

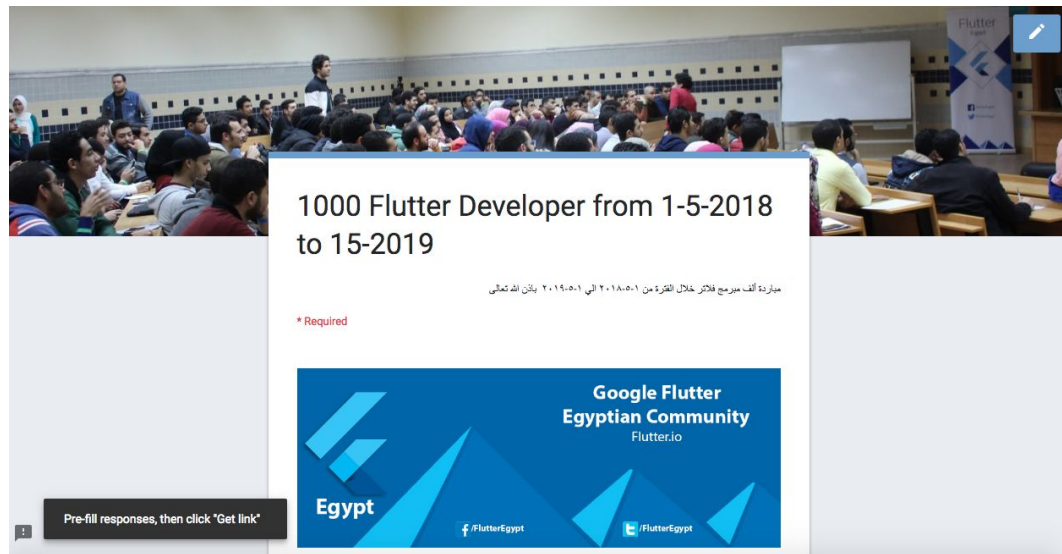


appcelerator®

JavaScript

Thanks

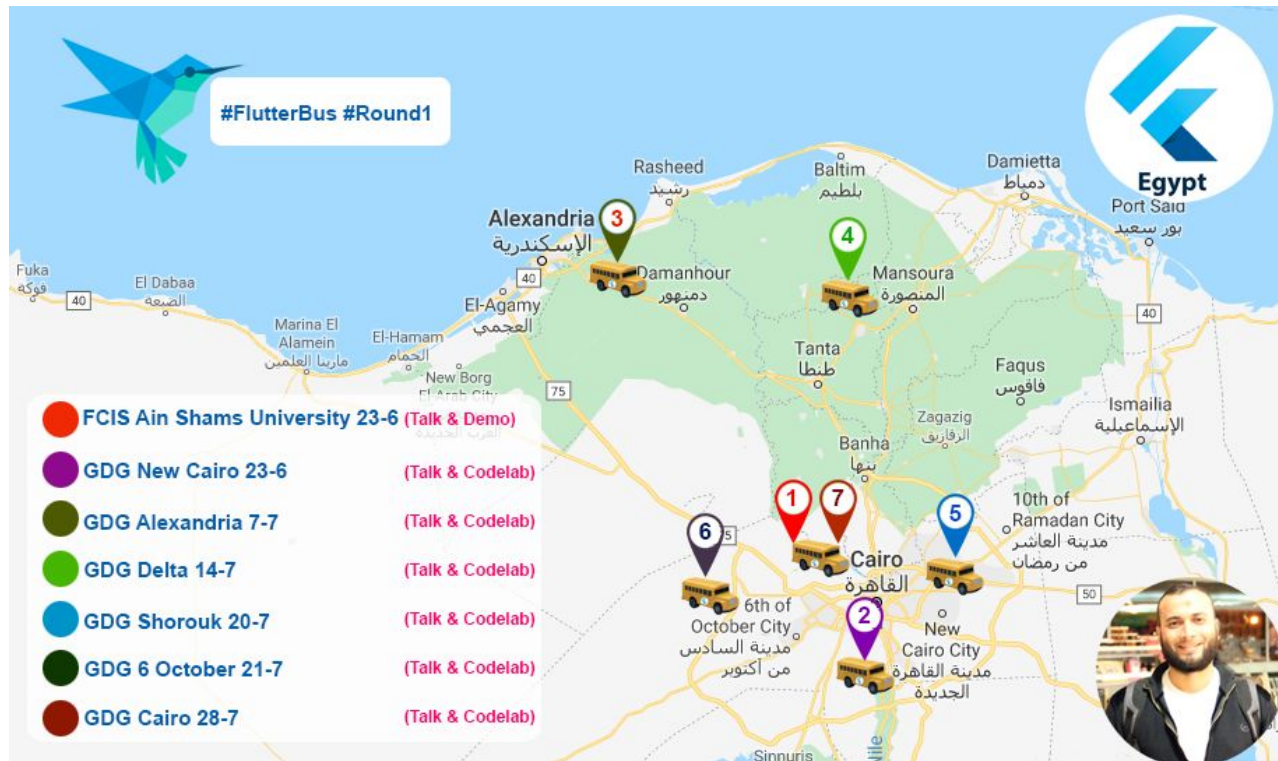
FlutterEgypt Campaign



<http://bit.ly/Flutter-Egypt1000>

<http://flutteregypt.com>

FlutterEgypt Campaign



<http://bit.ly/FlutterBus>

<http://flutteregypt.com>

About Me



My name is Ahmed Abu Eldahab

- Co-Founder & CTO of Savvy Arabia
- Founder of FlutterEgypt
- I wrote my first line of code 22 years ago (1995).
- I started teaching programming since (2000).
- I have 15+ years experience with software (Web - Mobile - Desktop)



/Dahabdev



/Dahabdev



/Dahabit