Flutter Architecture

Flutter is a UI toolkit that allows users to build compiled applications for the web, IOS, Android, Linux, macOS, and Windows platforms as a code. Flutter is designed as a layered system that consists of a series of independent layers.

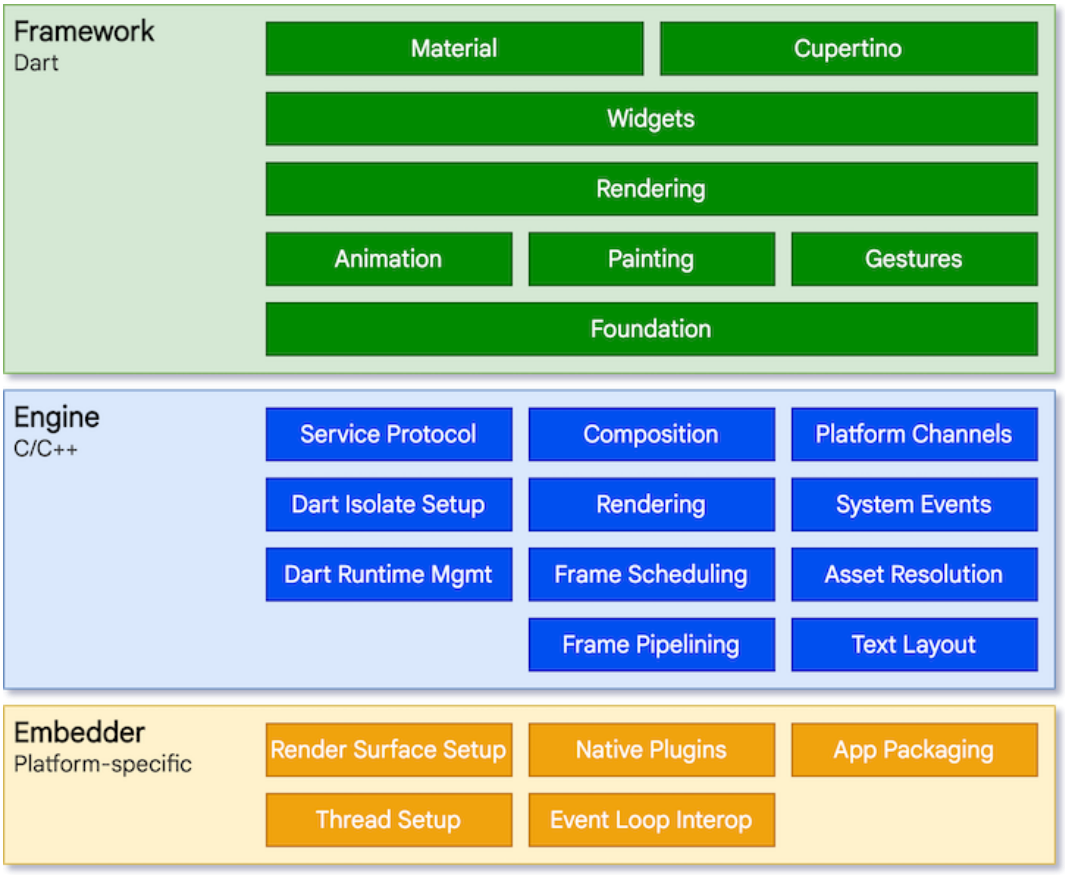

Figure 1 Flutter Layers

Figure 1 shows Flutter's system which consists of three layers: Embedder, Engine, and Framework. Starting with the Embedder, it is the entry point that interacts with the operating system to access services. By using the embedder, Flutter can be integrated as an existing application. The second layer is the engine layer which is written in C/C++ programming languages, and it takes care of the input, output, runtime, compilation, etc. The engine is exposed to the Flutter framework through "dart:ui" library. Lastly, the framework layer is the part where developers interact with Flutter, and it's written in Dart programming language. Within the

framework layer, it comprises basic foundational classes, widgets, material, and Cupertino libraries.

In Flutter, everything is a widget. A widget is an instruction you place in your code which is the basic building block of a Flutter application UI. Widgets indicate how configuration and status are displayed to the user. Widgets form a hierarchy that carries all the way to the container that hosts the Flutter app (MaterialApp) or (CupertinoApp). To build UI in Flutter, there are two types of widgets: stateless widgets and stateful widgets.

Stateless widgets are static, meaning once they are initialized they don't change. Icons and texts are examples of stateless widgets. Also, stateless widgets override "build()" and return a widget. On the other hand, stateful widgets are dynamic, meaning they can change based on an action or a situation. TextField, Slider, and Form are examples of stateful widgets. Stateful widgets override "createState()" which returns a state.

Source: https://docs.flutter.dev/resources/architectural-overview - :~:text=a browser environment.-,Architectural layers,to be optional and replaceable.