The world of Dart only plugins

Or: Accessing platform features without having to use method channels

renan.gg

Hello there 👋

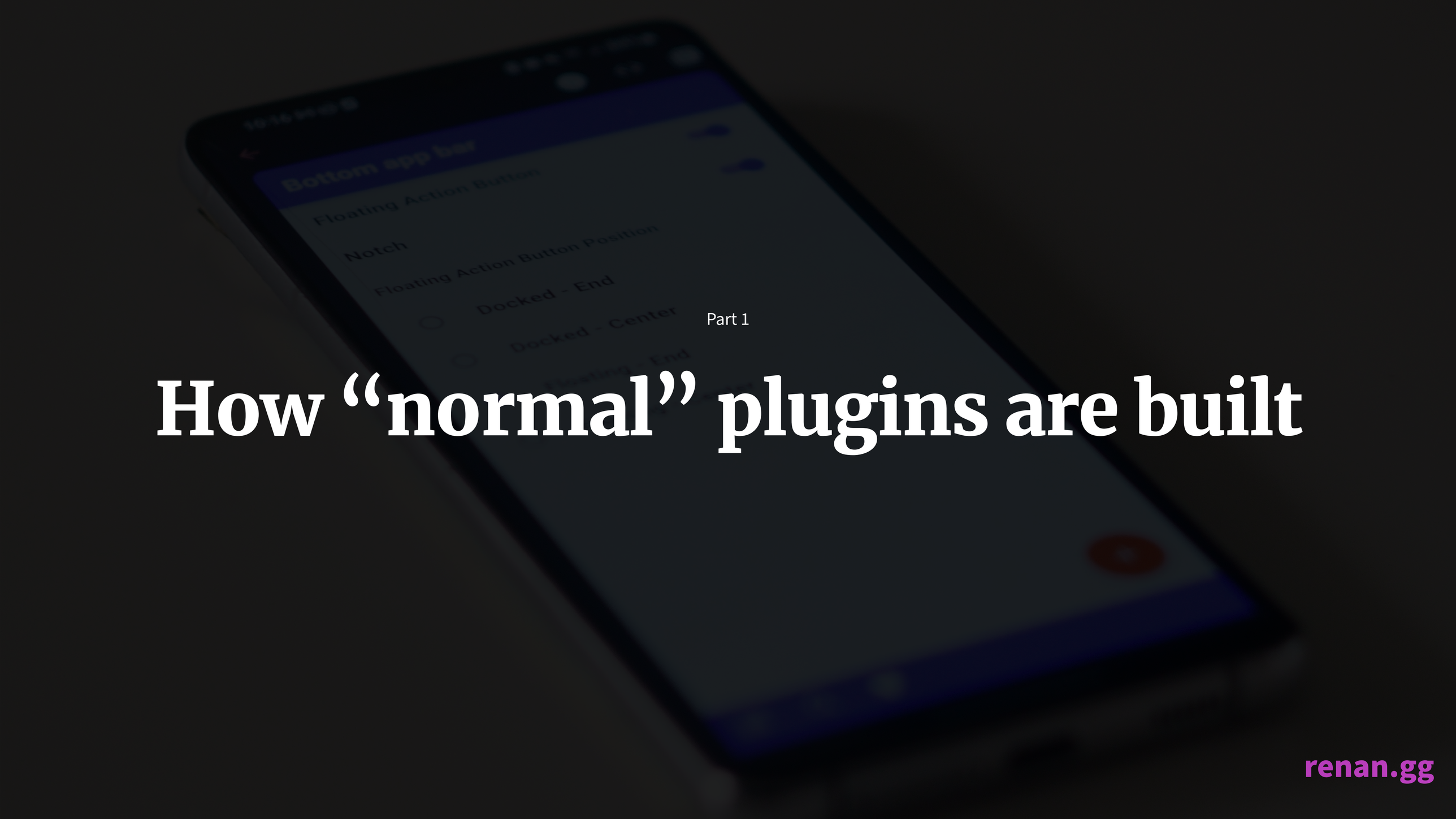
My name is

Renan Araújo

@reNotANumber

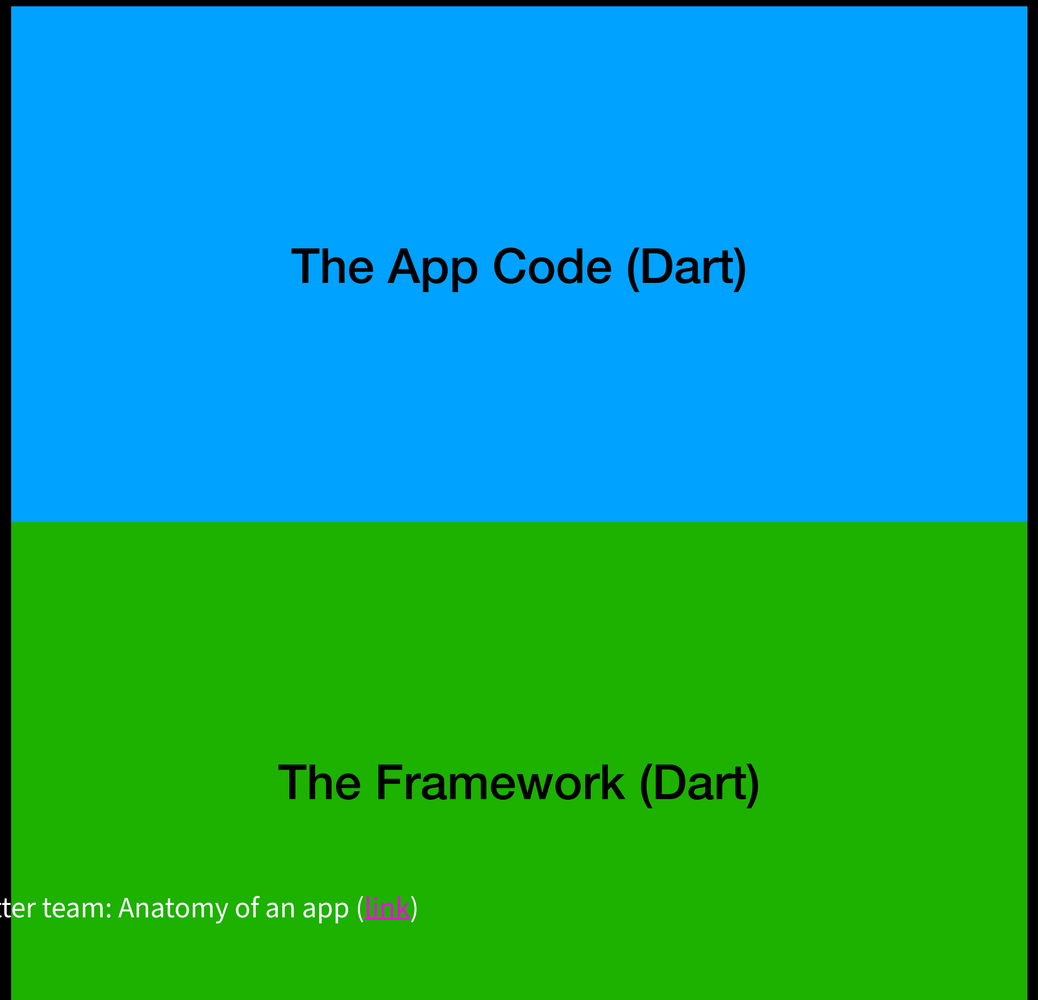
I live in **Porto**,
OSS Contributor for **Blue Fire** & OSS Engineer at **Very Good Ventures,**
You can see my socials and stuff at **renan.gg**

A new way to access native features



Part 1

How “normal” plugins are built



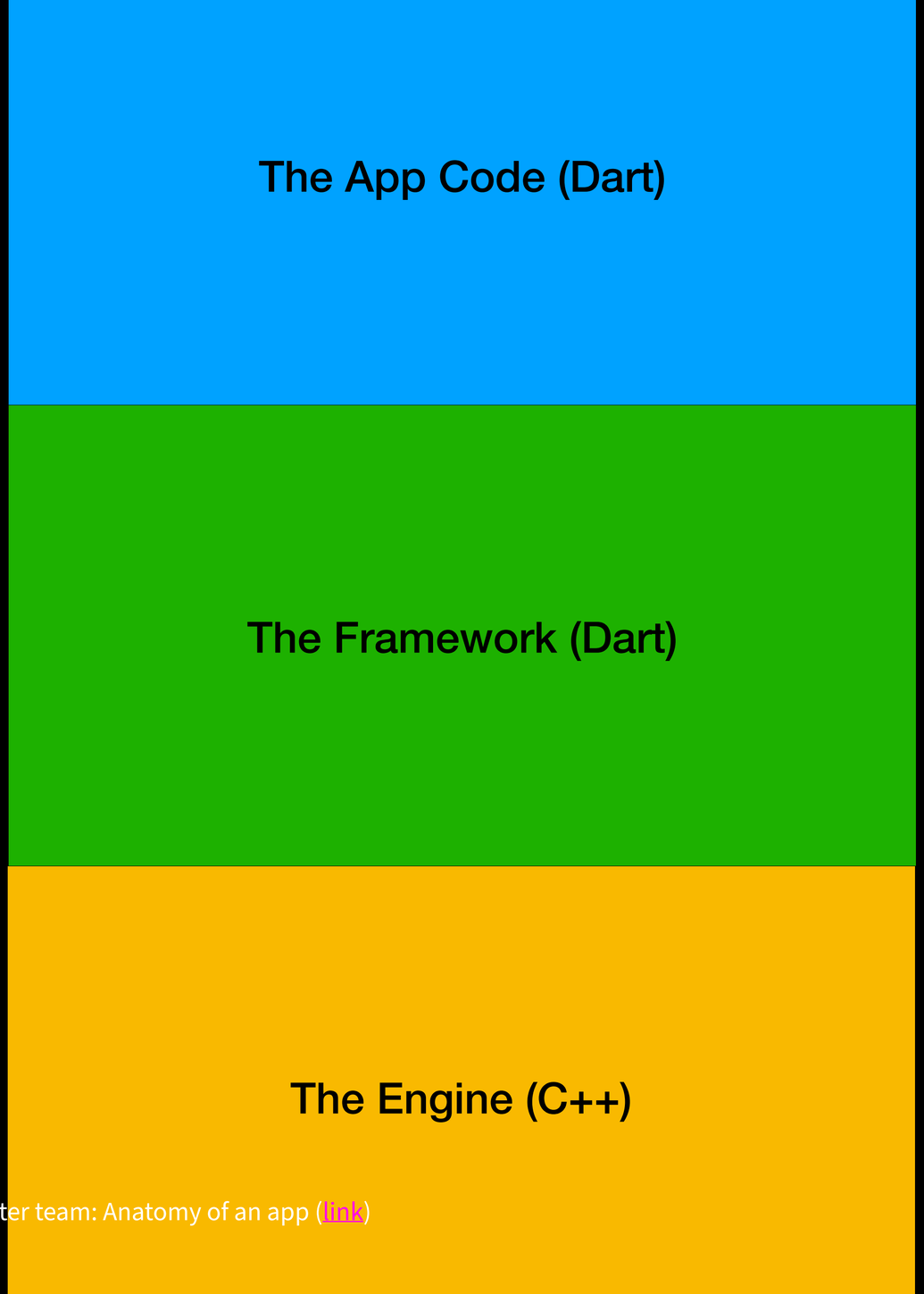
Everything we write:

All widgets we build,

Routes, State managers,

Packages…

Credits to the Flutter team: Anatomy of an app (link)



Most of the API we interact with:

Material, Cupertino, Widgets.dart, etc

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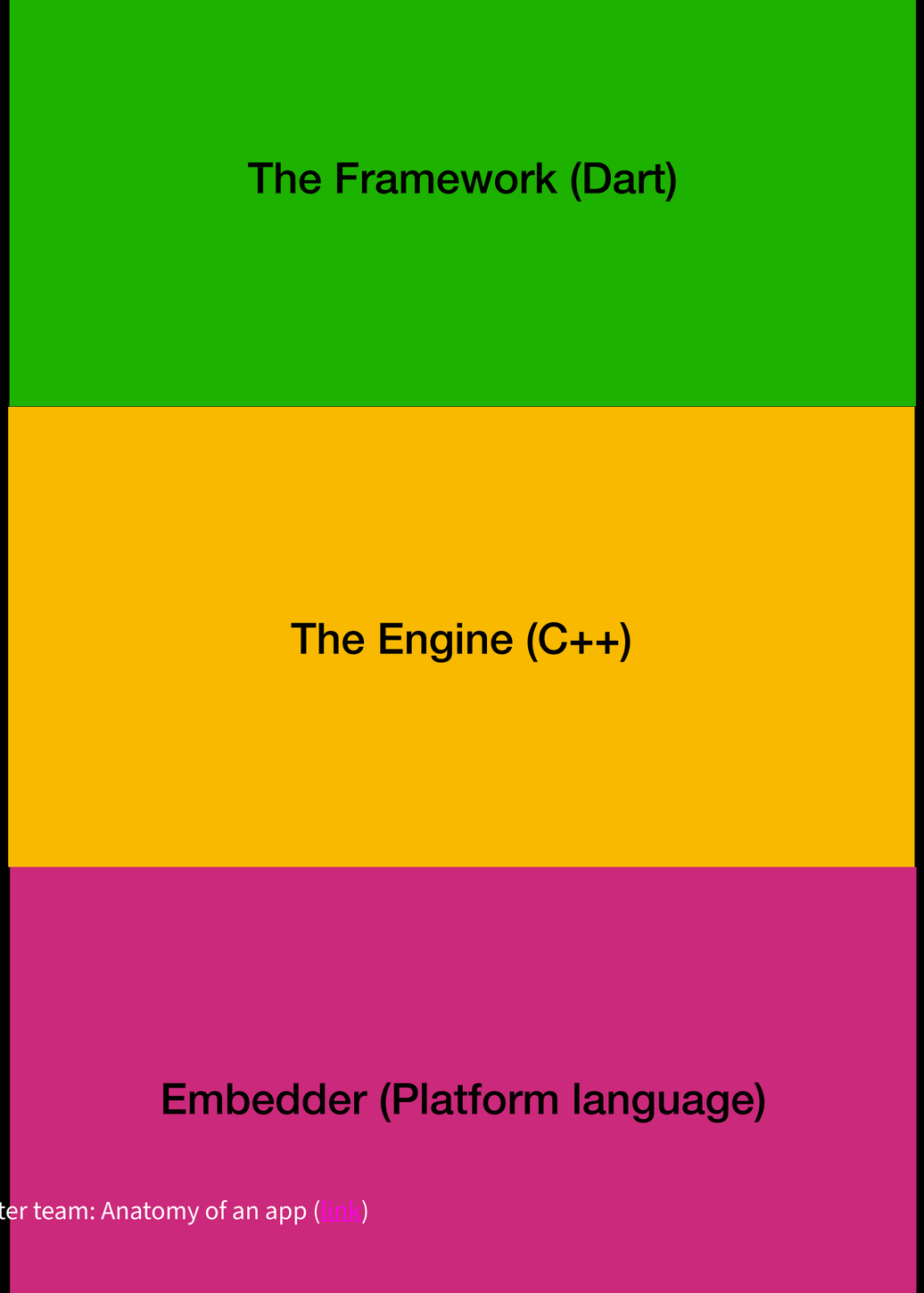

Flutter Engine:

dart:ui, core APIs, embedder API

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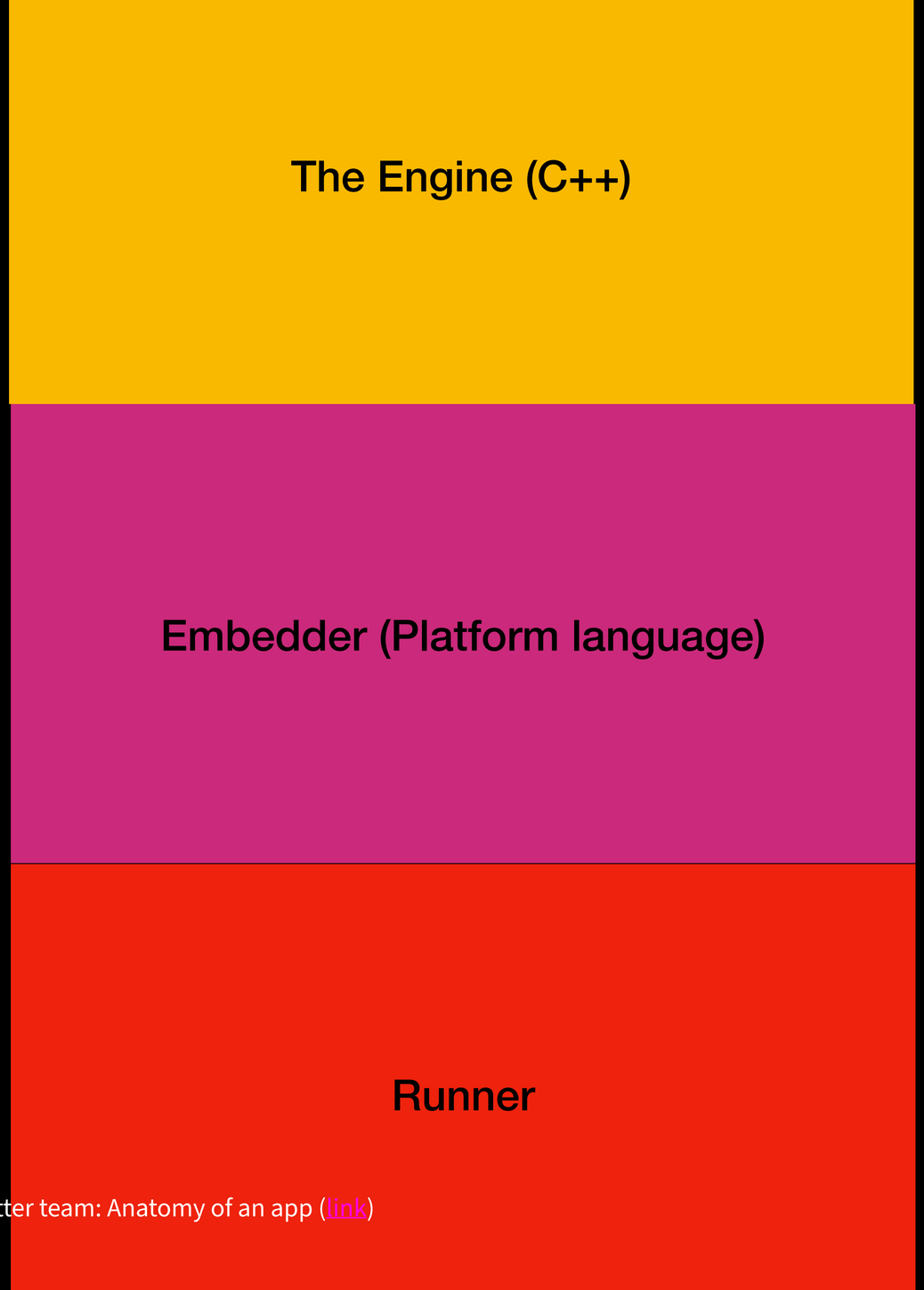

Embedder:

Platform-specific code, sync the event loop with the platform, Access to platform APIs such as gestures, keyboard, etc

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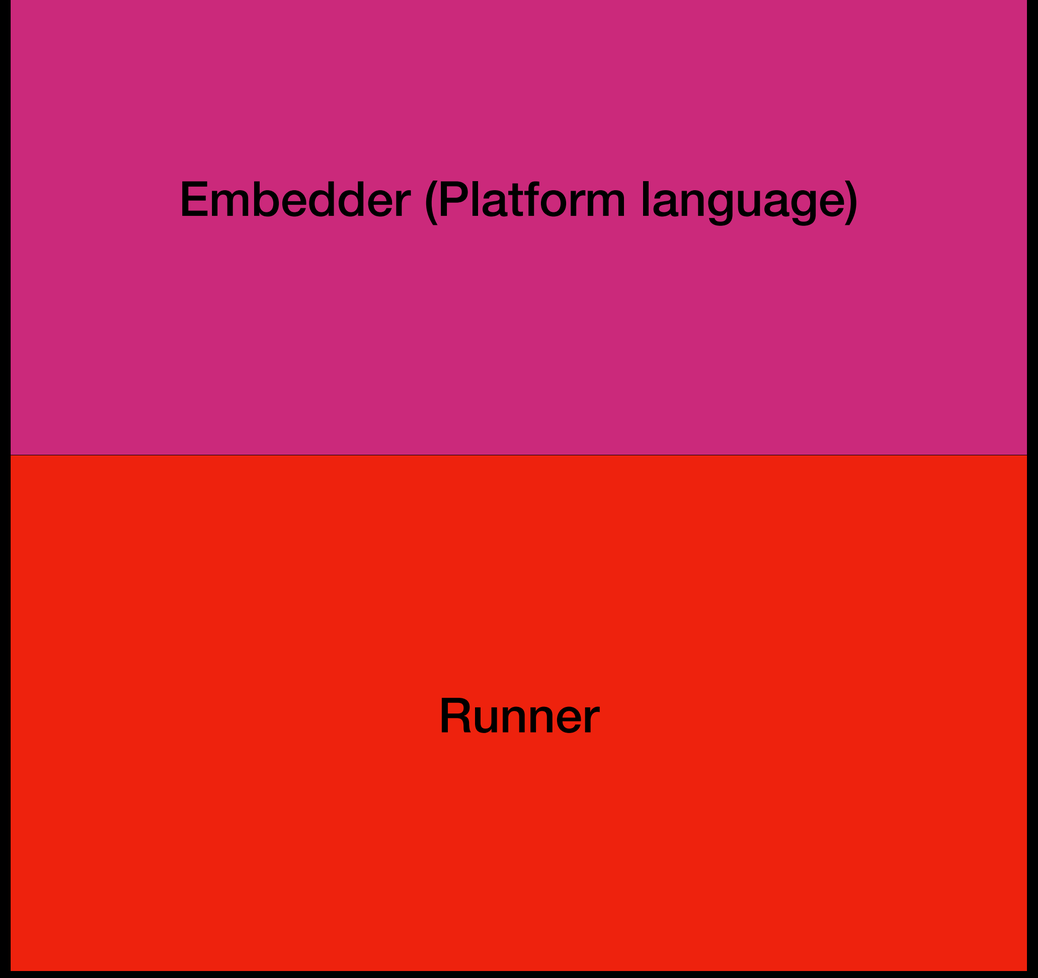

The Runner:

The actual native app that we gave under the platform directories: macos, ios, windows…

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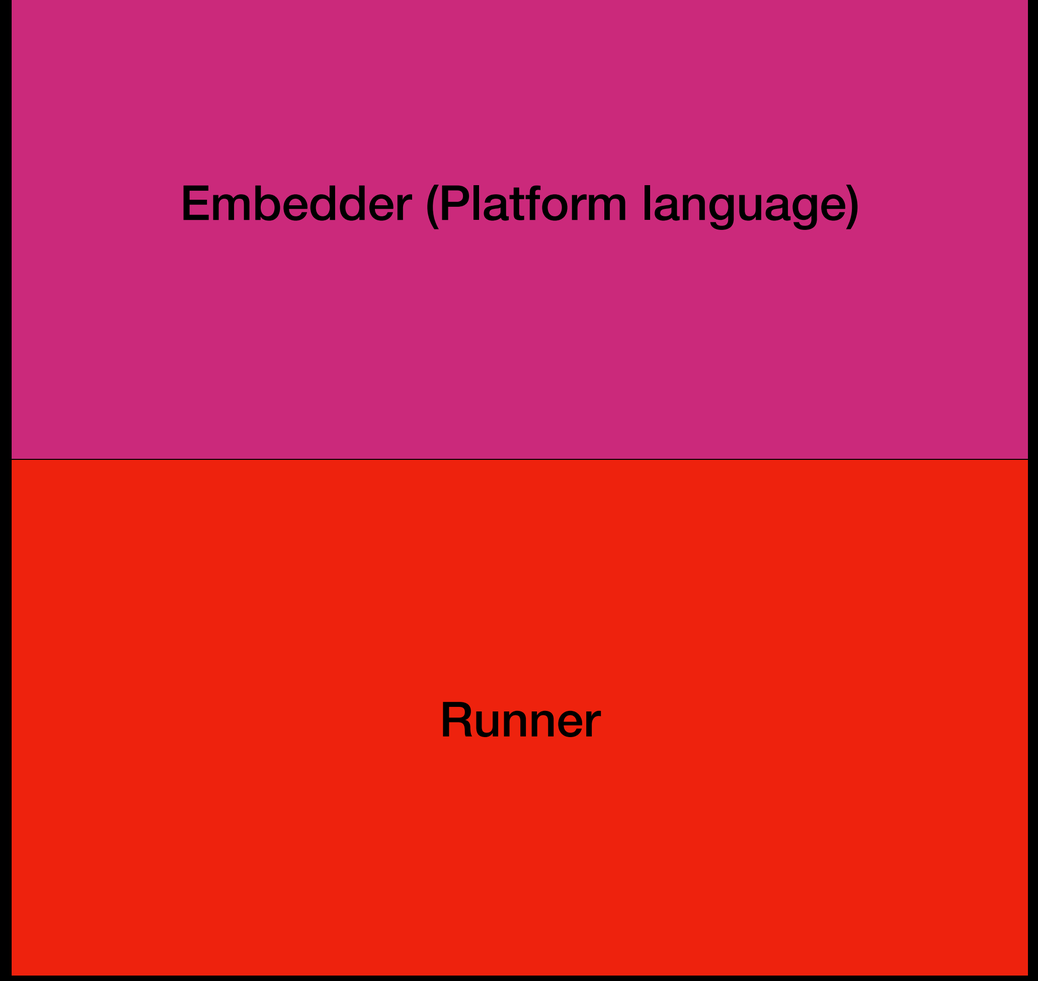
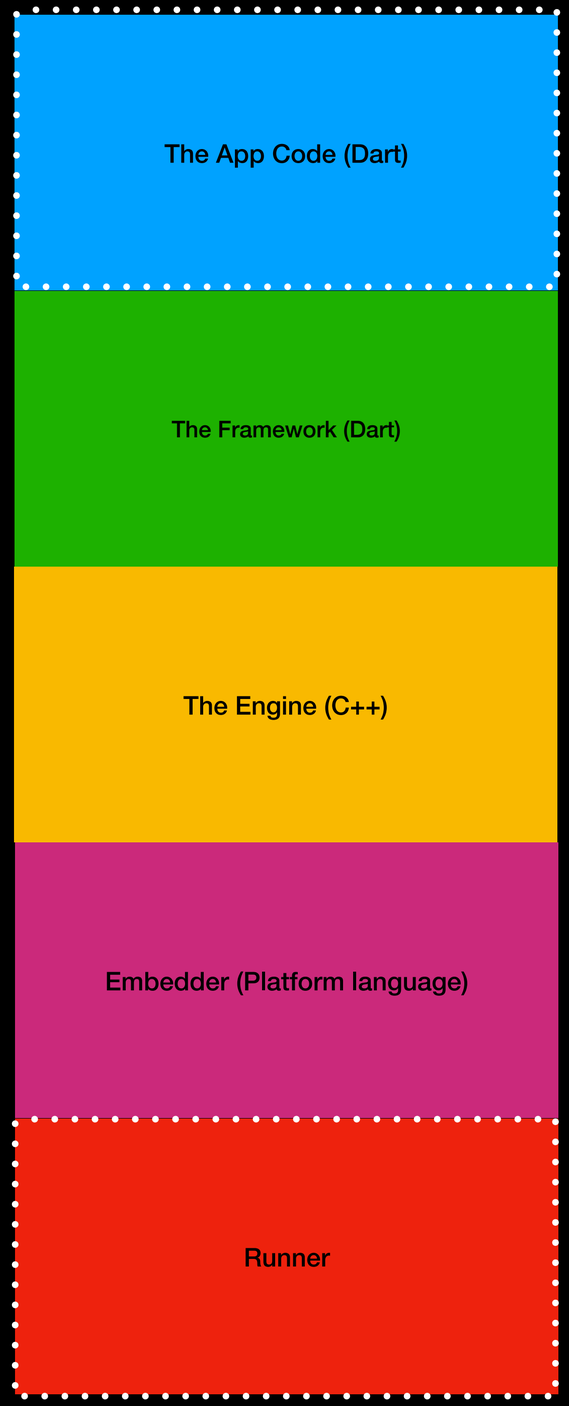
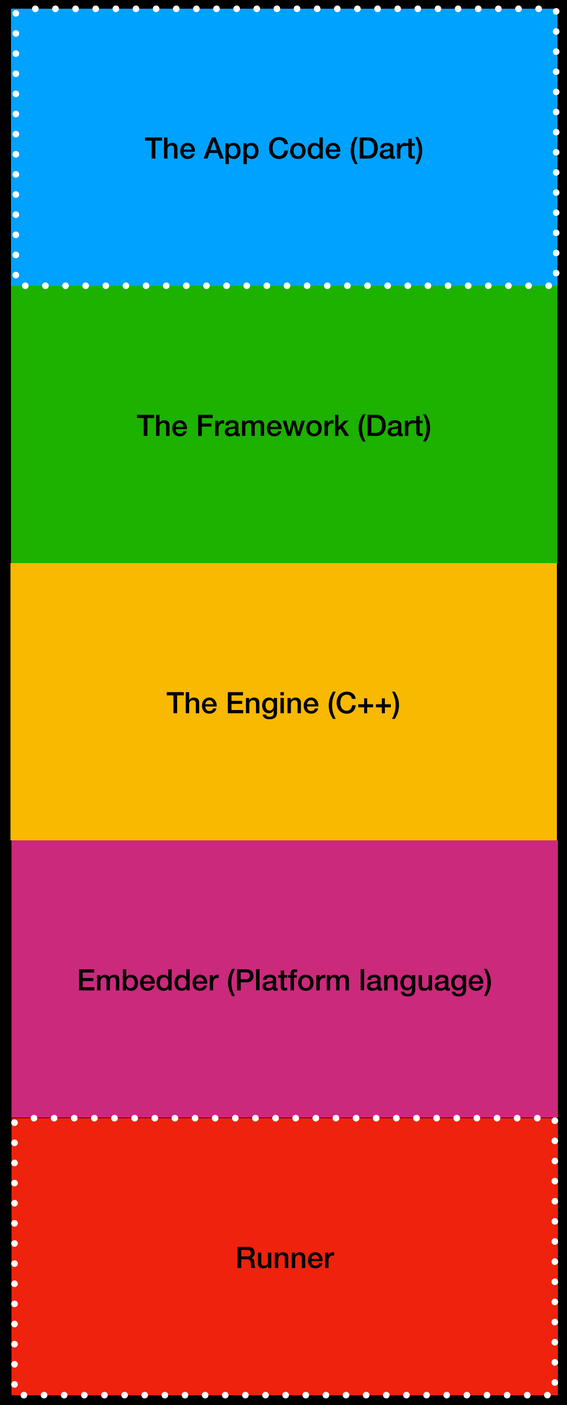
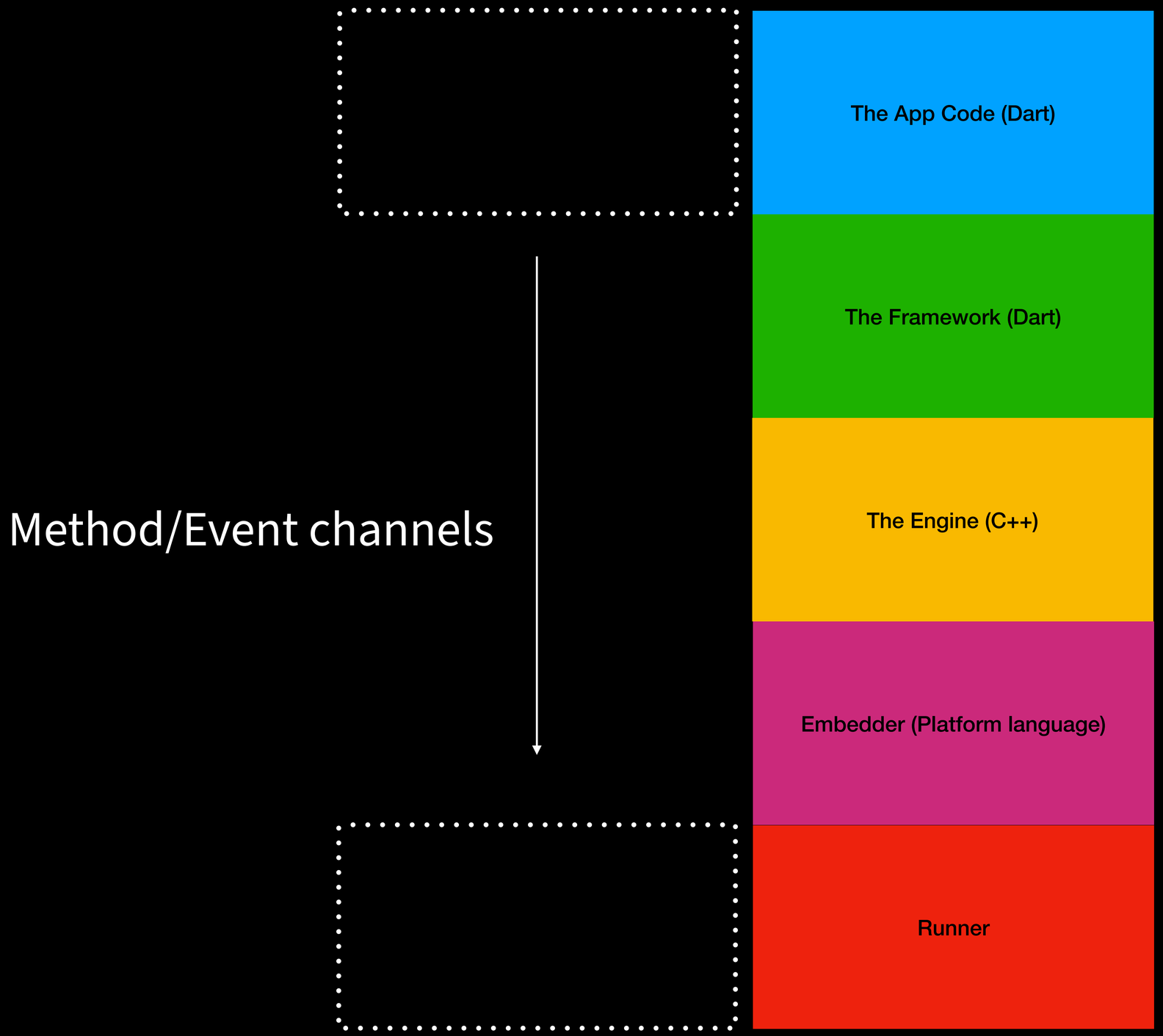

Embedder (Platform language)
Runner

Lives in the Apps repository




The App Code (Dart)
The Framework (Dart)
The Engine (C++)
Embedder (Platform language)
Runner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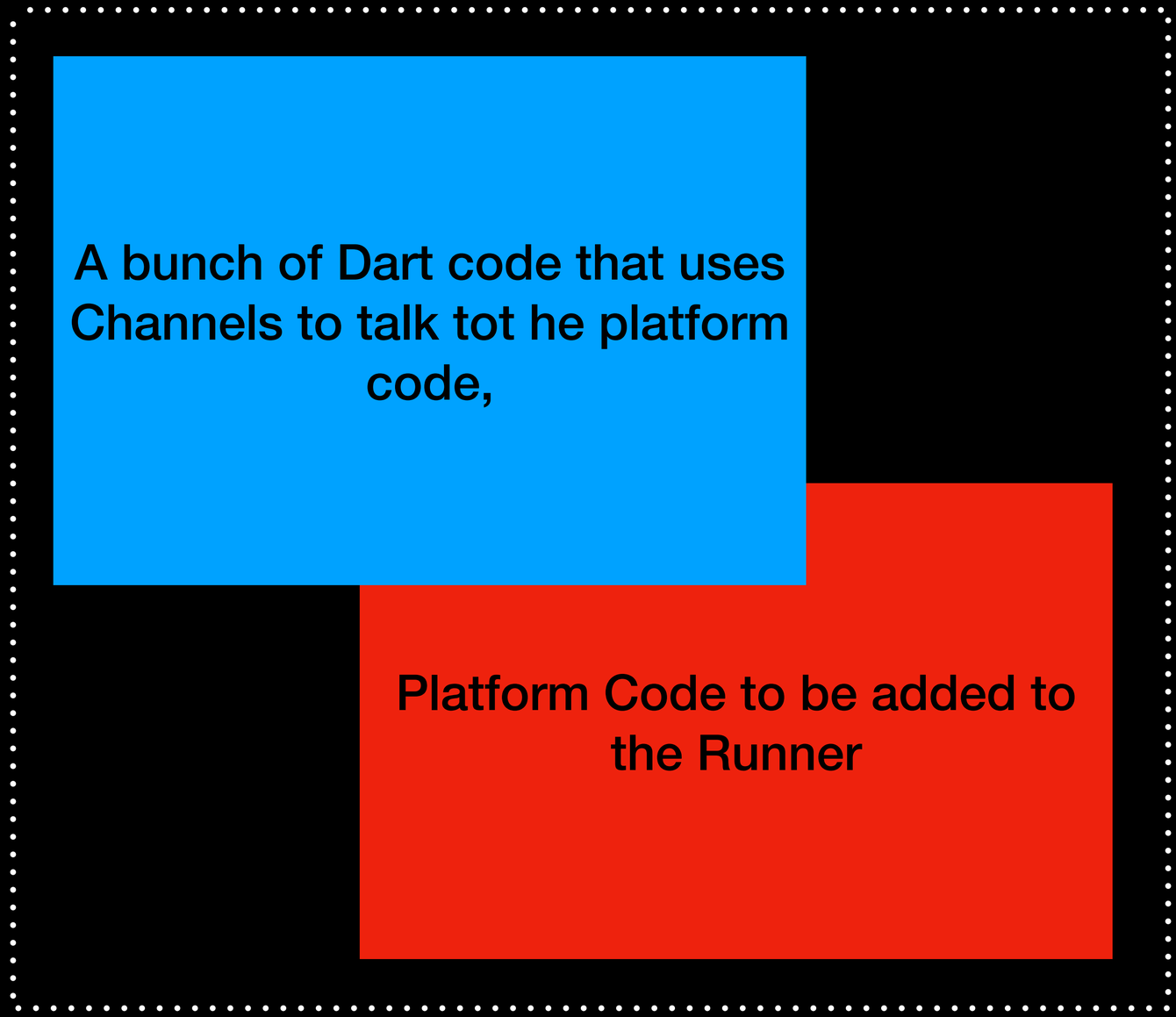
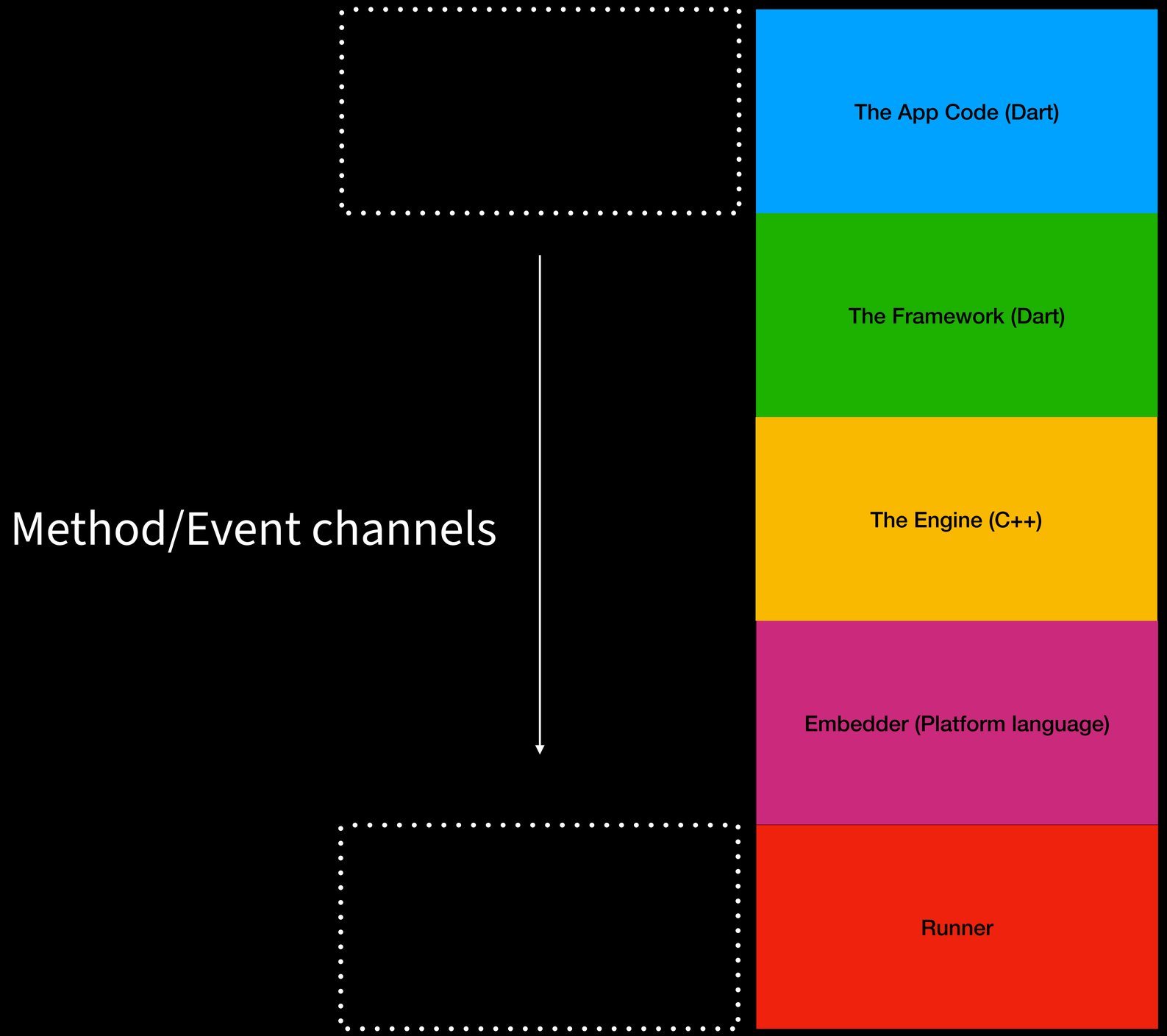
Method/Event channels

My Plugin


A bunch of Dart code that uses Channels to talk tot he platform code,
Platform Code to be added to the Runner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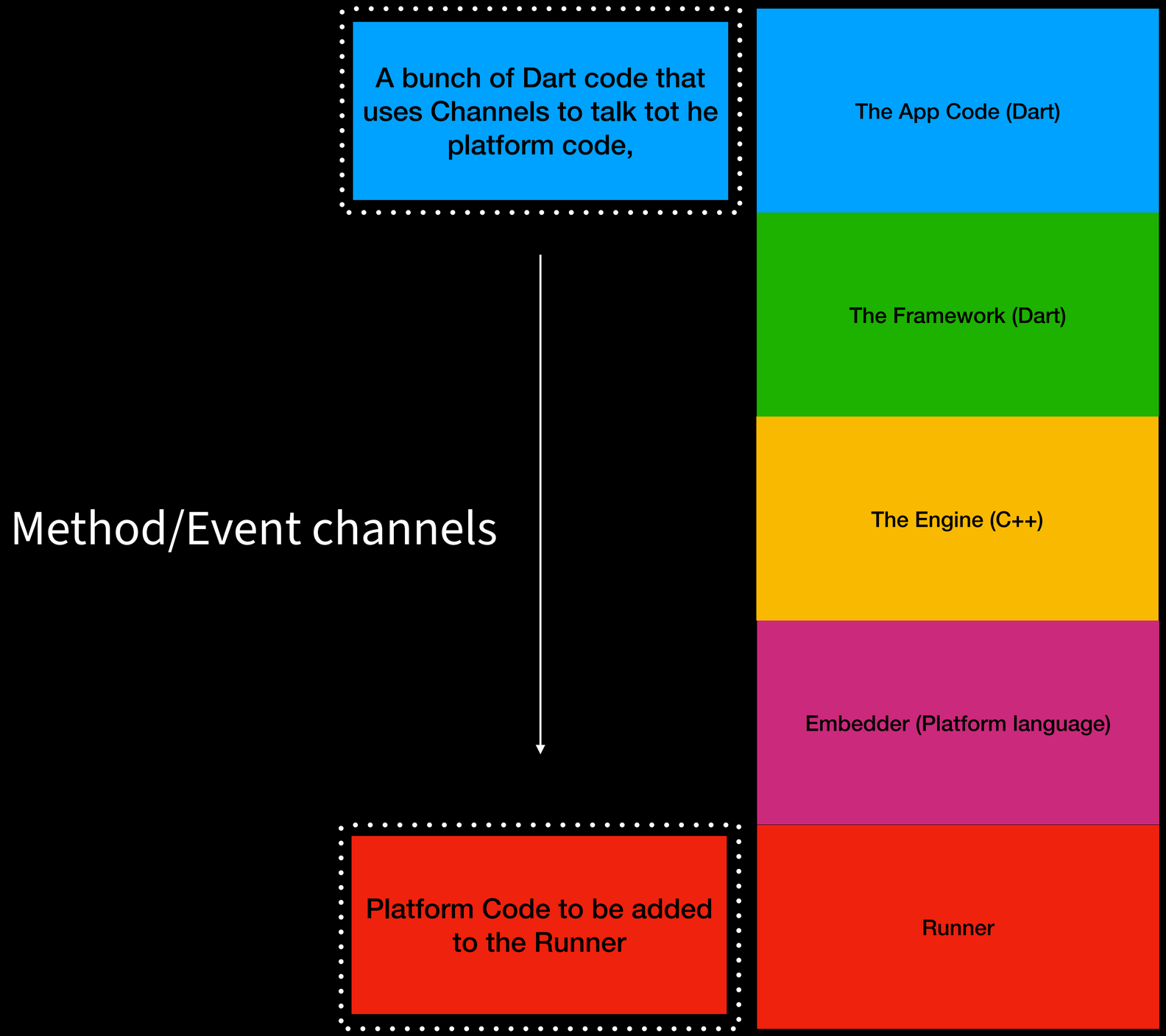
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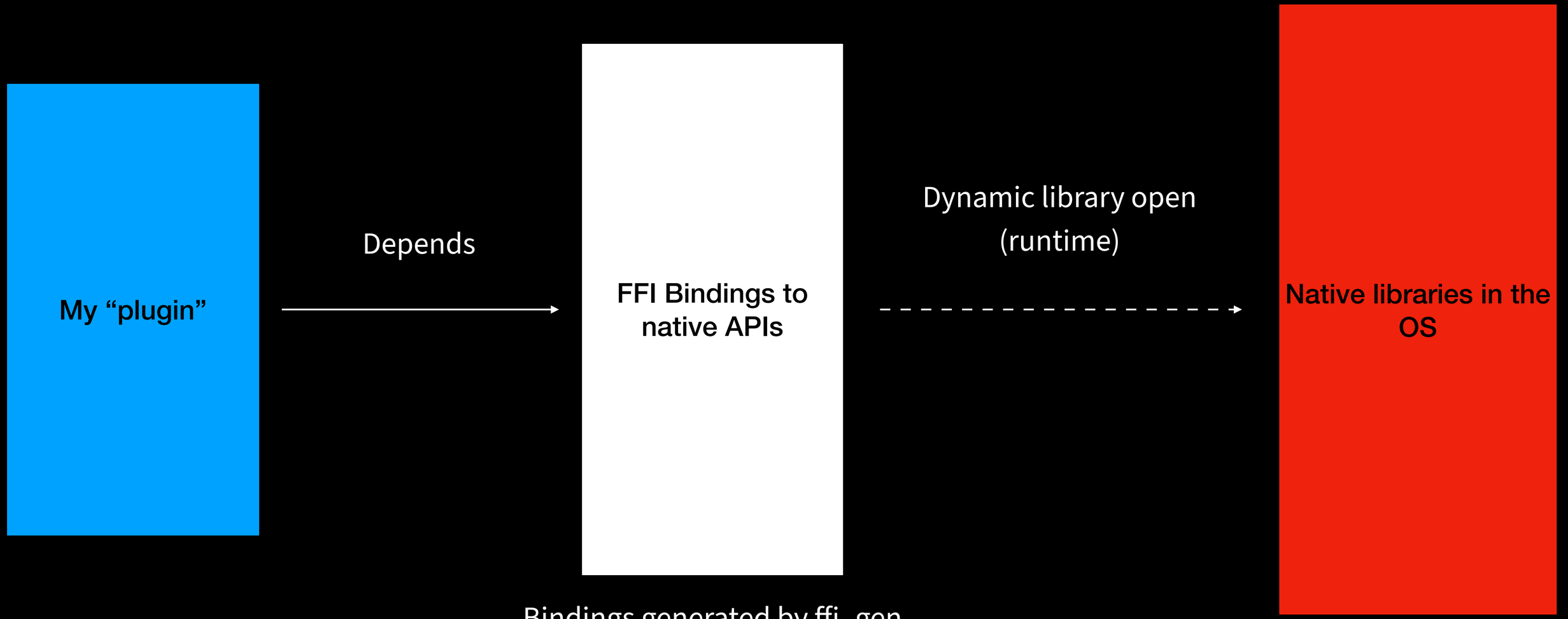
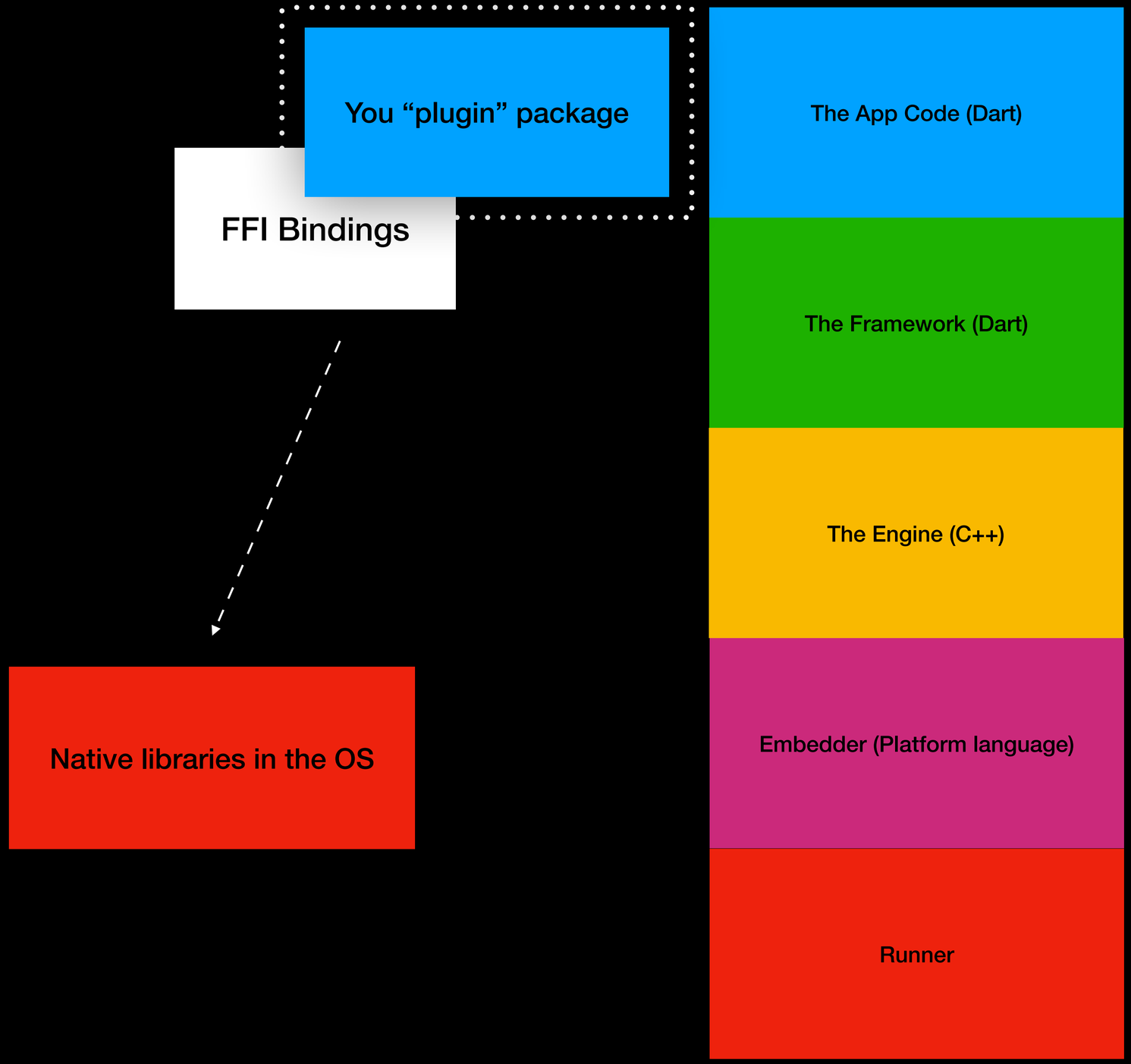
Part 2

Now lets do Dart-only “plugins”

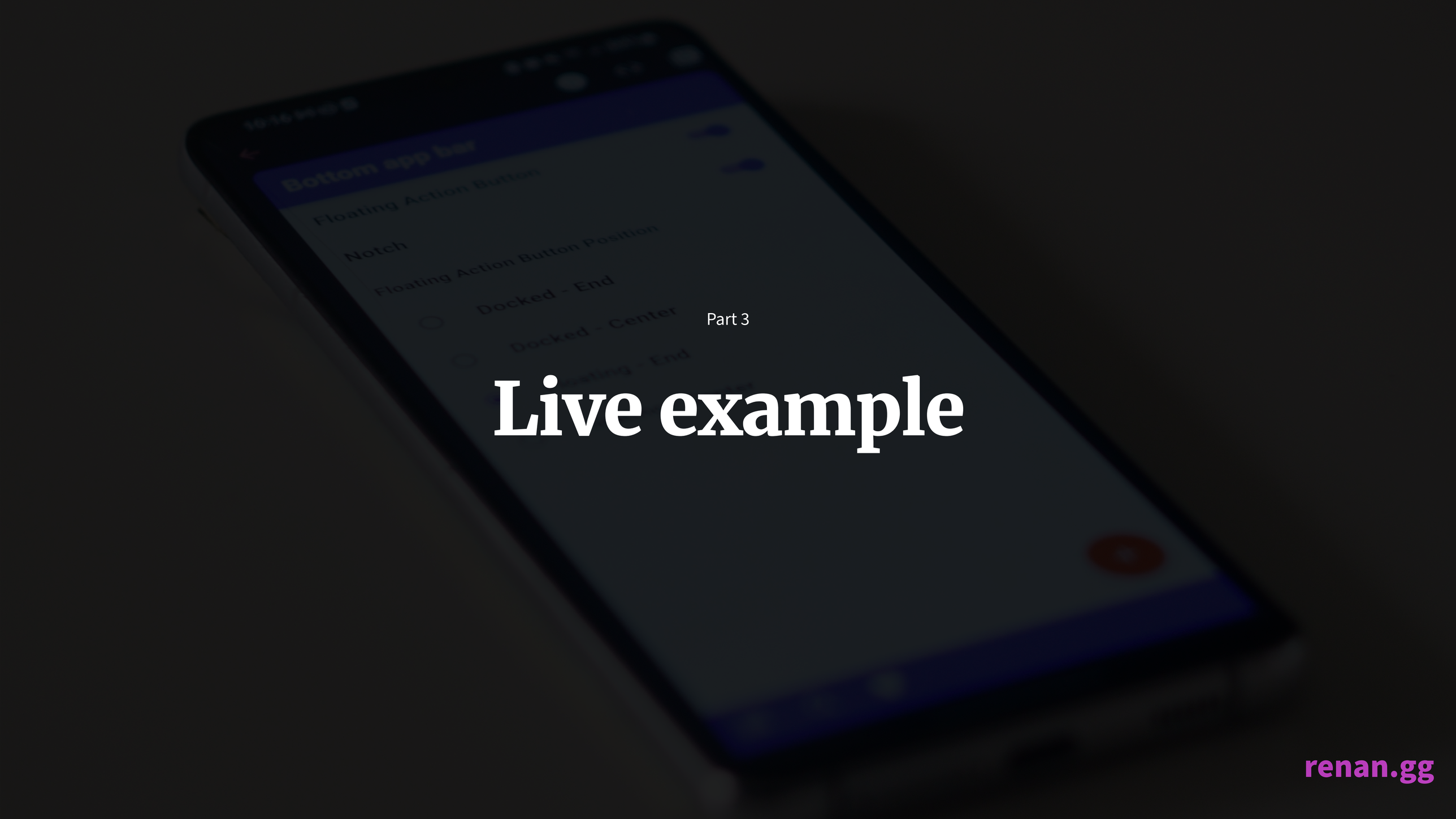

My “plugin”
Depends
FFI Bindings to native APIs
Dynamic library open (runtime)
Native libraries in the OS
Bindings generated by ffi_gen or packages like win32
Thanks Tim!


You “plugin” package
FFI Bindings
Native libraries in the OS
The App Code (Dart)
The Framework (Dart)
The Engine (C++)
Embedder (Platform language)
Runner

What changes?

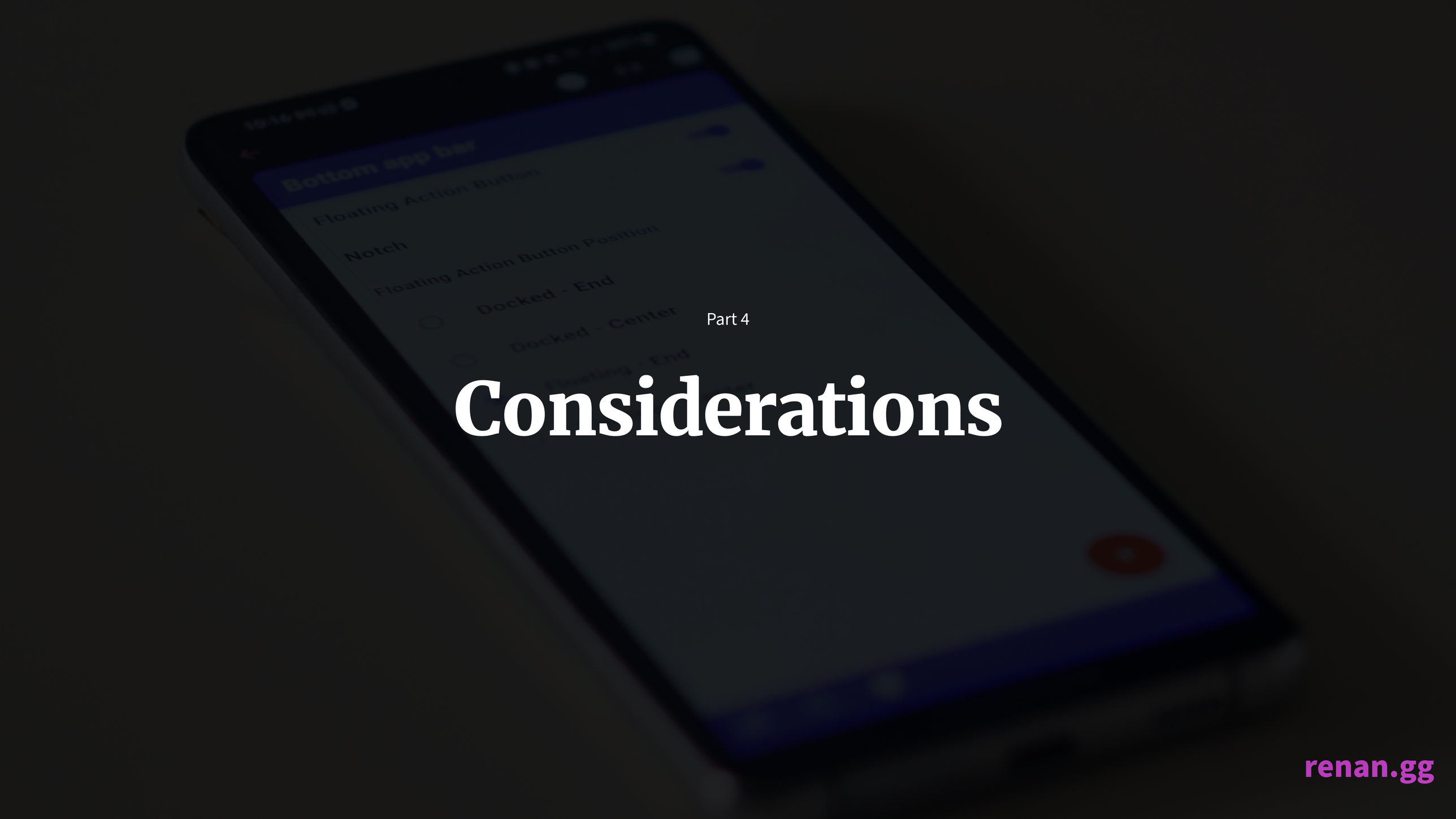
Differences to channels

- Calls are Type safe and Sync
- It is a Dart API, so no dependency on Flutter (in theory)
- Packages that exclusively call System Dylibs are not required to carry any native code



Part 3

Live example



Part 4

Considerations

Limitations

- Severe multithreading limitations
- It is unclear if the Apple Store will approve iOS apps that loads dynamic libraries via Dart

Continue learning

Objective-C and Swift interop using package:ffigen (link)

Rethinking Dart interoperability with Android (link)

Win32 package (link)

Example Repo (link)

Thank you

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