



# **SNS COLLEGE OF TECHNOLOGY**



**Coimbatore-35**

**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## **DEPARTMENT OF COMPUTER APPLICATIONS**

### **23CAT607- CROSS-PLATFORM APP DEVELOPMENT**

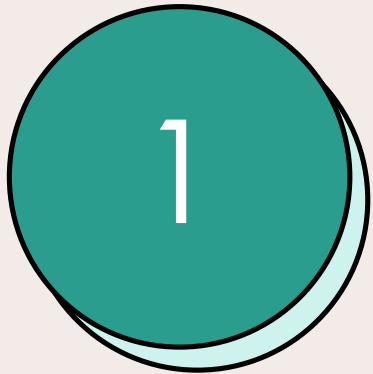
I YEAR II SEM

## **UNIT 1 – INTRODUCTION WEB DESIGN**

TOPIC 5 – Popular Cross-platform App Development Frameworks



# Agenda



Frame work  
recap



Realworld  
examples



Introduction  
to flutter



Architecture  
of Flutter



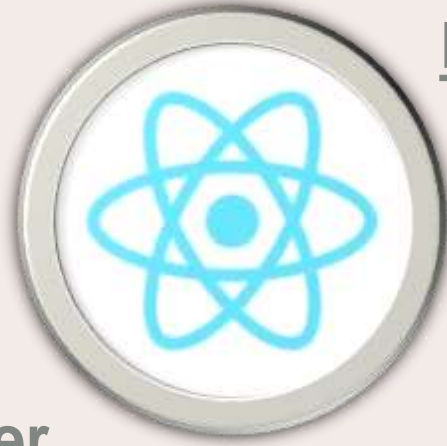
Summary



# Cross-platform App



Flutter



React Native



Appcelerator



Xamarin



Qt



Adobe PhoneGap



Safari web inspector tools



# Cross-platform App



Sencha



Apache Cordova



Unity



Ionic



Solar2  
D



# Frame work



Framework	Target Platforms	Real-world App Examples
React Native	iOS, Android	Facebook, Instagram, Skype, Uber Eats, Walmart, Bloomberg, Pinterest
Flutter	Mobile, Web, Desktop	Google Ads, Cryptograph, Alibaba, Hamilton, Reflectly, Postmuse
Xamarin	iOS, Android, Windows	Olo, FedEx, Trello, Alaska Airlines, Boradband.com, Insure.com
Ionic	Mobile, Desktop, Web	Sworkit, Untappd, Pacifica, Nationwide Mobile Banking, Lomotif, Genius Scan



# Framework

NativeScript	iOS, Android	MLSSoccer.com, Novo Banco, Encode, Stratmatic
Apache Cordova (PhoneGap)	Mobile, Desktop, Web	Untappd, Astro File Manager, Sworkit, Merkur Bank, Countless Truck Driving Games
Qt	Desktop, Mobile, Embedded	VLC Media Player, Skype, Telegram Desktop, Photon, GammaRay
Unity	Mobile, Desktop, Web	Pokémon Go, Monument Valley, Cuphead, Hearthstone, Rust
Electron	Desktop (Windows, macOS, Linux)	Slack, Discord, WhatsApp Desktop, Visual Studio Code, Skype, Twitch
Progressive Web Apps (PWAs)	Web, Mobile, Desktop	Starbucks, Uber, Twitter Lite, Flipboard, Pinterest, Spotify, Google Maps



# Flutter intro



- ✓ Flutter is a modern, open-source mobile app development framework created by Google. It allows you to build beautiful, high-performance apps for both iOS and Android using a single codebase written in the Dart programming language.

## Getting Started with Flutter

Install Flutter

Learn  
Dart

Set up an  
IDE

Learn Flutter  
Basics

Build Your First  
App

Explore Widgets and  
Packages

Practice and Build  
Projects



# Architecture of flutter

**The layer model:** The pieces from which Flutter is constructed.

**Reactive user interfaces:** A core concept for Flutter user interface development.

**An introduction to widgets:** The fundamental building blocks of Flutter user interfaces.

**The rendering process:** How Flutter turns UI code into pixels.

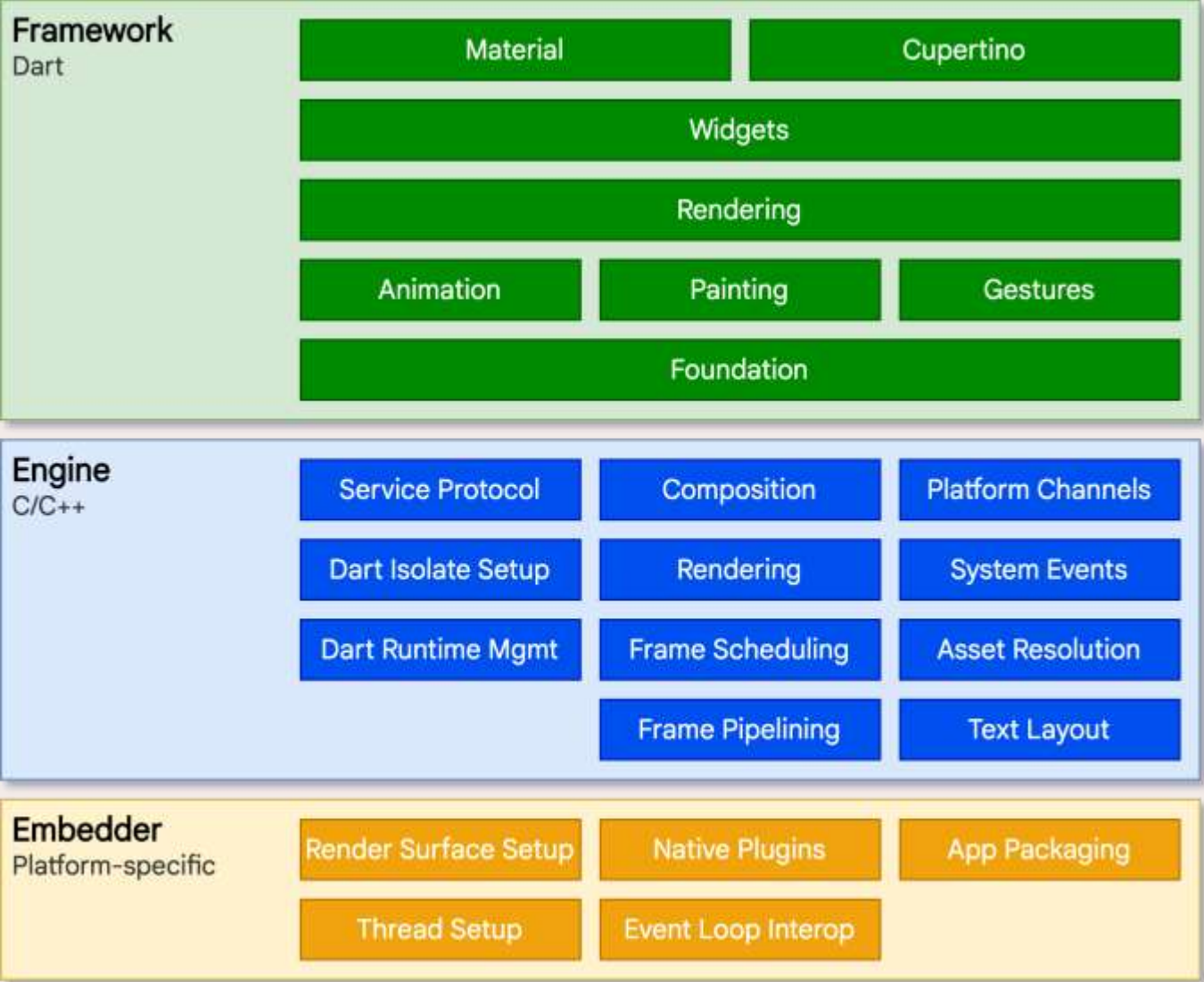
**An overview of the platform embedders:** The code that lets mobile and desktop OSes execute Flutter apps.

**Integrating Flutter with other code:** Information about different techniques available to Flutter apps.





# Architectural layers



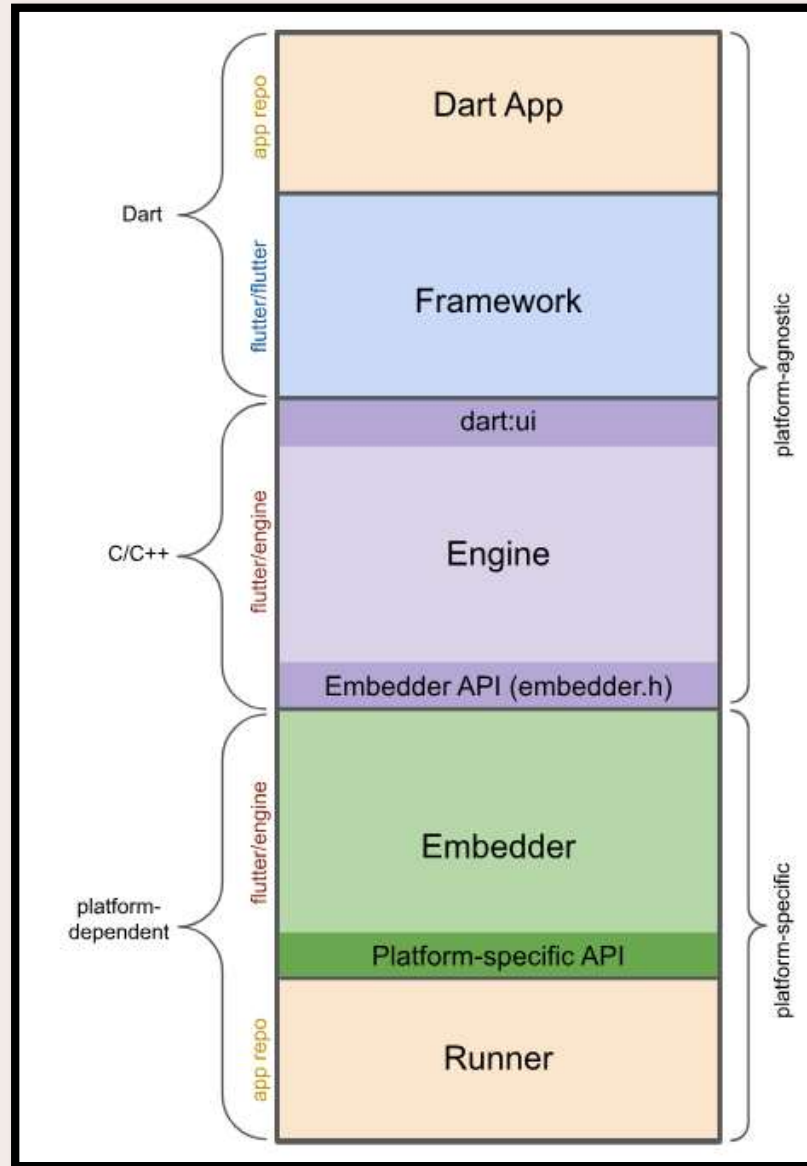
The engine is exposed to the Flutter framework through [dart:ui](#)



# Anatomy of an app



Flutter app generated by flutter create.



## Dart App

- Composes widgets into the desired UI.
- Implements business logic.
- Owned by app developer.

## Framework (source code)

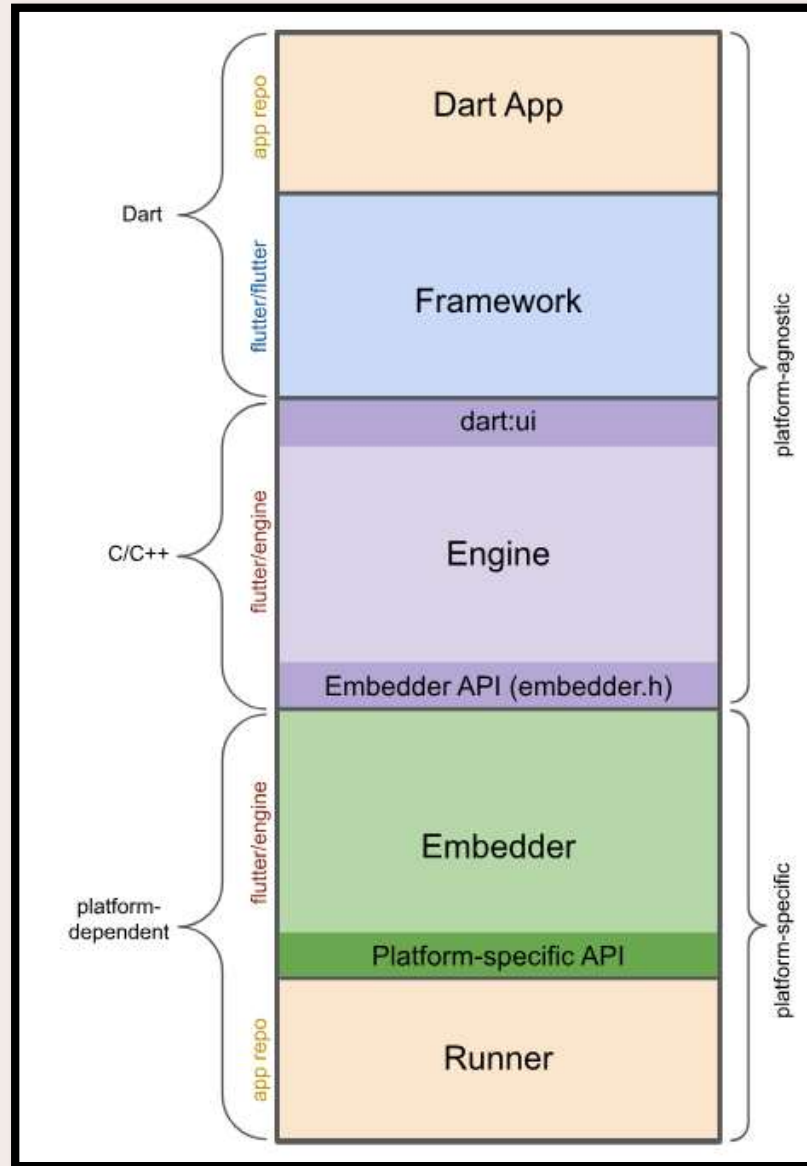
- Provides higher-level API to build high-quality apps (for example, widgets, hit-testing, gesture detection, accessibility, text input).
- Composites the app's widget tree into a scene



# Anatomy of an app



Flutter app generated by flutter create.



## Engine (source code)

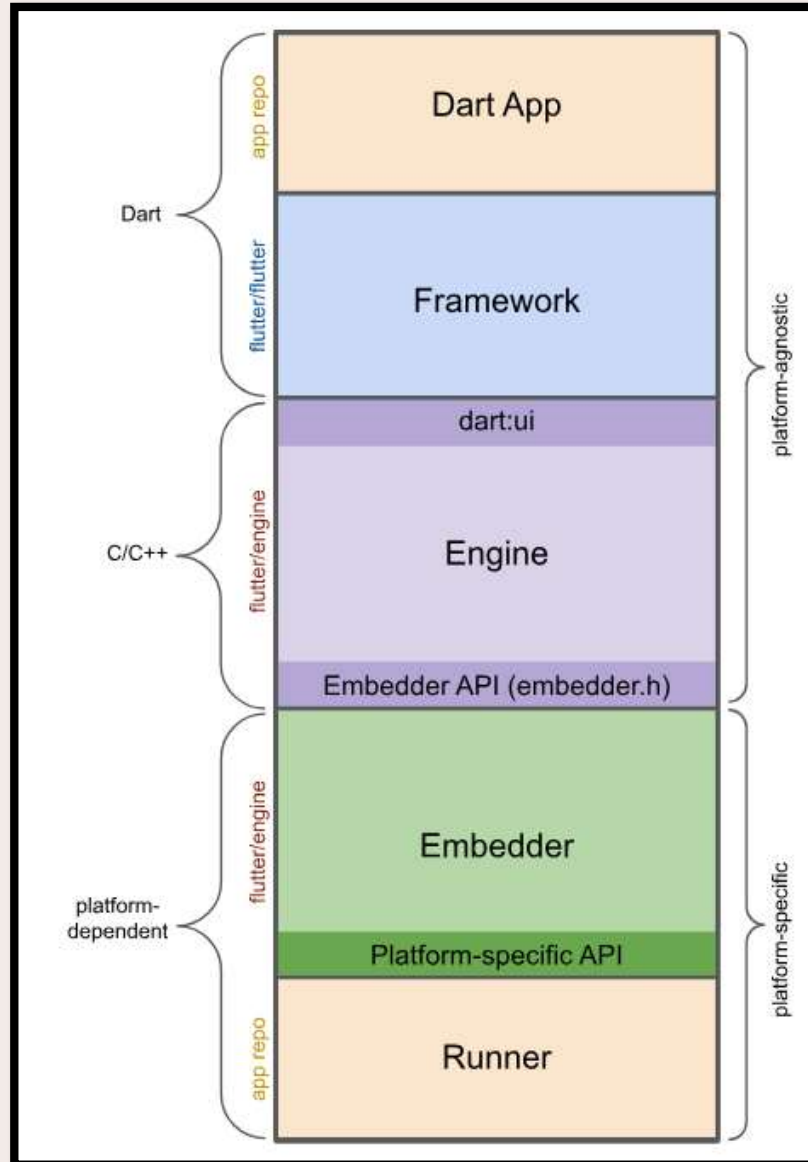
- Responsible for rasterizing composited scenes.
- Provides low-level implementation of Flutter's core APIs (for example, graphics, text layout, Dart runtime).
- Exposes its functionality to the framework using the **dart:ui API**.
- Integrates with a specific platform using the Engine's **Embedder API**.



# Anatomy of an app



Flutter app generated by flutter create.



## Embedder (source code)

- Coordinates with the underlying operating system for access to services like rendering surfaces, accessibility, and input.
- Manages the event loop.
- Exposes **platform-specific API** to integrate the Embedder into apps.

## Runner

- Composes the pieces exposed by the platform-specific API of the Embedder into an app package runnable on the target platform.
- Part of app template generated by flutter create, owned by app developer.



# Thank you

## REFERENCE:

- Official Flutter Documentation: <https://flutter.dev/docs>
- Flutter Codelabs: <https://flutter.dev/codelabs>
- Flutter Samples: <https://flutter.dev/samples>
- Flutter YouTube Channel: <https://www.youtube.com/flutterdev>
- Online Courses and Tutorials: Udacity, Pluralsight, Coursera, and more.

