Flutter Toolchain components:

1- **Dart SDK:**

Dart is a programing language to write flutter code.
It is optimized for creating UI.
Providing strong typing and asynchronous programming.
Supports Both AOT (Ahead of Time) compilation and JIT (Just in time compilation).

AOT:

AOT helps to speed up the execution by compiling the code before the execution.

JIT:

JIT allows for more flexibility by compiling the code on the fly during the runtime enabling features such as hot Reload.

Asynchronous programming:

Asynchronous programming is a programming paradigm that allows programs to run several tasks at a single time without waiting for one task to complete before starting another. This is especially useful in scenarios where tasks take time to complete such as fetching data from databases, reading files and waiting for user input.

2- **Flutter Framework:**

Provides the core UI components and APIs.
Includes the predesigned widgets, tools and libraries.
Provides APIs to interact with operating systems and services.
Allows to create complex UI.

API (Application Programming Interface):

Set of tools that help software applications interact with each other. It is like a bridge between the two system that allows them to exchange data and functionalities without knowing the internal working of each other.

3- **Flutter Engine:**

It is a runtime environment that renders Flutter Apps (it is written in C++).
Handles drawing of new Frames and Manages Textures.

It Deals with platform specific graphics.
Interfaces with the operating system to access input devices.
It Ensures that flutter app runs smoothly and look visually appealing on different devices.