

## A Study of Flutter Framework & direct comparison with Different Alternative

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### Abstract

Flutter is an open source framework developed by Google Inc. to facilitate faster app development on both IOS and ANDROID. Flutter uses dart as its base language which is in term of syntax is same as c++,c.java. This document includes the basics of flutter how it works and how it functions.

This study will also help beginners to get a deep and root level understanding of how the framework works. The main goal here is to execute a comprehensive study on flutter.io framework .The fundamental concepts and characteristic of platform will be explained and demonstrated. Comparison with other alternative such as React native and other will also be included.

With direct comparison to the alternatives it can be clearly understood how flutter is better as compared to the React Native or Native or Ionic. After witnessing the huge success of React in web development, goggle decided to create their own framework to get into the mobile application development more deeply.

### Keywords:

Flutter, Flutter components, Alternatives of flutter, Deep dive into flutter. Native Script, React Native Ionic study, Best language for Native apps, Android / IOS development with Native

### 1. INTRODUCTION

Nowadays our life is deeply connected with our mobile devices. Since November 2016, there is more network traffic made by mobile devices (48.19%) compared to desktops/laptops (47%). [1]. For any developer to get the most out of this situation there are mainly two platforms namely Android and IOS .The difference between these two platforms are huge in terms of cost, development, usage, resources.

Both platforms require different set of skill such as java for Android and Objective c or Swift for IOS.

To overcome this difficulty Google introduces a new system named flutter in the end of 2016[6].

Inspired by React Native, Flutter application can also run on both platforms, thus reducing the cost and complexity of app production across IOS and Android. Flutter is build from the root level to top level by Google and until 2016 Google only used it for their commercial project..

Flutter supports stateful hot-reload while developing, which is considered as a major factor to boost development cycle. Stateful hot-reload is essentially implemented by injecting updated source code into the running Dart VM without changing the inner structure of the application, thus all transitions and actions of the application will be preserved after hot-reloading [6] .

### 1.1 Advantages of this study:

- Providing root level knowledge to beginners in order to develop their skill in the development field.
- Removing the burden of developing different application for different platforms as here a single codebase can be used.
- For app development start-ups that majorly rely on user friendly and effective development kits, Google Flutter is a gift.

### 2. ALTERNATIVES AND COMPARISON:

- There are a number of product available in industry some popular product are as follows:
  1. React Native
  2. NativeScript
  3. Ionic
- All three technologies **allow you to build real native mobile apps for both IOS and Android** - without the need to learn Swift, ObjectiveC, Java or Kotlin!

- Instead, javascript for React Native, Native Script and Ionic and Google owned Dart for Flutter. Hence instead of using two different language native apps can be created with single language only its upon the developer to decide which language is more feasible to them – this will generally help in reducing the learning curve and developing mobile app efficiently.

### 1. React Native

- Facebook Inc. has created React native Framework.
- By composing React component beautiful apps can be created using JavaScript and React Library.
- Facebook themselves took the initiative and created the first application that is based on React native from frontend to backend it's called Facebook Ads Manager

### 2. Native Script

- Different variance of Native Script available in market such as angular with TypeScript and Vue.js.
- Native Script allows to work with a large number of framework as presented different options can be developed independently from each other.
- If developer A is not comfortable with one framework he/she can use other combinations with native library.
- Official docs are available which explain all the components in a clear way.
- Native Script also ships a lot of pre-build component which can be used in the interface.
- The only problem is that it does not work with HTML.

### 3. IONIC <https://www.hotstar.com/sports/cricket/vivo-ipl-2019/chennai-super-kings-vs-rajasthan-royals-m189963/live-streaming/1440000002>

- Ionic also allow to create native app but it can only be achieved by creating web apps by using HTML, JS and CSS.

- This interface will be then wrapped into native app which will run in web view
- Web view is nothing but a hidden browser inside the application.
- It works with any frontend framework if developers wants or it can works on its own starting with Ionic 4.
- A bunch of components are at developers disposal and wide range of selections.

### 2.1 Comparisons of alternatives:

This paper includes comparison with different alternatives on the basis of different criteria.

#### 1. Comparison based on code reusability

- Based on code reusability standard Flutter and Ionic provide better code reusability as Native uses different code base for both Android and IOS, the same goes for React because for UI interface different code needs to be developed.

#### 2. Comparison based on Third party library support

- Currently Native has the most powerful library support followed by Ionic and React where in comparison flutter is way behind in this department the reason for which is that it is a new product and current support for library is low.

#### 3. Comparison based on Popularity

- Flutter has the potential to get on the best position and becoming the primary choice for developers but it has a long run to cover as the technology is still in beta phase where as the best available choice is Native followed by React and Ionic if the popularity is taken into consideration.

#### 4. Comparison based on Performance

- It sees all the alternatives in the rear view mirror except native, native is the best in terms of performance where react is at third position. Among all the alternatives the performance of Ionic is poor as it runs on browser.

### 5. Comparison based on consumption

- If the comparison is made on basis of consumption Native again becomes the rabbit of the race as it is the most widely used framework whereas React is also very popular and growing rapidly. Ionic is mostly only used for small applications where they want fast development.

### 6. Comparison based on Productivity

- By taking productivity as criteria ,flutter is at second position here, Ionic holds the throne among all alternatives and native is at the lower spectrum .Noticeably react native is good at overall productivity as per people review.

### 3. FUTURE SCOPES

- The latest capability based operating system “Fuchsia” which is being developed by Google is a very promising product which will allow developer to take the full advantage of Flutter.
- As drag-and-drop editors are already in development it will attract beginners into the ecosystem.
- The future for flutter is looking bright as Google is trying their best to push flutter in every aspect of development possible.

### 4. CONCLUSION

- Flutter community is getting huge day by day and developing mobile application became so much easier as compared to earlier times.
- From a user point of view, you will be amazed by the level of responsiveness and smooth animation flutter can provide.
- From a developer point of view, developing native apps are far more convenient than developing application on two different platforms.
- Even for the customer the wait time to get a working prototype is heavily reduced after the advancement of native apps.
- To conclude the study it can be said that developer must give a shot to flutter as it is backed by Google and the future

opportunity are far more bright than expected.

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