

Native And Cross-Platform Apps

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Abstract—This document shows what are the native apps and the cross-platform apps and what are its advantages.

Index Terms—native, cross-platform, apps, advantages

I. INTRODUCTION

Mobile devices have become indispensable companions in our daily lives, and their functionality is intrinsically linked to their hardware components. These physical elements, which form the technological backbone of smartphones and tablets, play a crucial role in the user experience, determining everything from performance to the ability to perform complex tasks.

II. NATIVE APPS

A native mobile app is an application that is built for a specific platform. The native mobile application is written in the platform's native programming language: for Android — Kotlin and Java, for Apple iOS — Objective-C and Swift. A native mobile app has access to all the native technologies and hardware capabilities of a particular platform. Native mobile apps must be downloaded and installed on the device, for example through the official Google Play Market and App Store.

A. Advantages

- Access to device hardware (geolocation, camera, microphone, accelerometer, light sensors, calendar, push notifications) and extensive functionality due to this.
- Can satisfy more different requests from customers and users.
- User data can be easily collected and analyzed.
- They generally work more stably and efficiently with any device used on their operating system.
- There is no limitation on the functionality of the speed and quality of the Internet connection: the application can work without access to the network.
- Best suited for applications with custom interfaces and complex business logic.

B. Cons

- Expensive development.
- Development takes a long time.
- Every app store must verify native apps.
- They cover few platforms and are incompatible with other operating systems.
- Even the smallest changes require regular updates.

III. CROSS-PLATFORM APPS

Cross-platform app development means that the app is developed using a technology/language/framework that allows it to be used on several different operating systems: Android, iOS, Windows, Linux, etc. For example, React-Native apps can work on Android and iOS. Hybrid app development means that an app is developed using multiple languages/technologies, but it doesn't always mean that it will be cross-platform. Apps can be hybrid but will not necessarily be considered cross-platform. An application can be considered cross-platform, but it does not have to be hybrid. It can be a web application or even native (for example, the React Native framework uses a JavaScript runtime to generate JavaScript code and then publish the application to both the Google Play Market and the App Store). Likewise, apps can be hybrid and cross-platform simultaneously (e.g. React-Native + native platform language). Approaches in developing a mobile application can be combined. For example, create performance-critical screens on native and secondary technologies on cross-platform ones.

A. Advantages

- Cross-platform development is much faster than developing native mobile applications for several different platforms at once.
- Great for startups that need to get to market faster with an MVP to test a theory.
- Suitable for creating event applications, for example, for business conferences, trade fairs, etc., due to the speed of creation.
- Cross-platform development often contributes to more effective development of developers, as it involves working with various technologies and environments and also stimulates problem-solving skills.
- Cross-platform is useful when writing a simple app with a small number of screens for multiple platforms (a simple mobile game is ideal for cross-platform).

Cons:

- iOS and Android differ significantly, and this causes development difficulties and many delays in the work of the finished application (most often this concerns the interface elements and their representation, the Animation FPS and Animation RAM indicators may differ 3 to 5 times).
- Cross-platform applications crash more frequently and slow down.

- It is more challenging to maintain cross-platform code: updating systems leads to frequent updating of programming interfaces, which requires more time.
- In the cross-platform world, there is a small community, and you often must solve problems on your own. There is a high risk of encountering a problem that few people know about.
- Cross-platform application development can significantly simplify life and save money for a client and business owners who are limited by financial resources and can add headaches to a developer.
- But a cross-platform application may require great efforts from developers and significant investments from the customer in moving from MVP to a finished product and in scaling the product.
- A cross-platform application can consume more battery of the user's device, and even one and a half times, which is inconvenient if the application is used frequently.

REFERENCES

- [1] Walker, R. (2022) La diferencia entre Las Aplicaciones Móviles Nativas y todas las demás, AppMaster. Available at: <https://appmaster.io/es/blog/la-diferencia-entre-las-aplicaciones-moviles-nativas-y-todas-las-demas> (Accessed: 15 January 2024).