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Analysis of hybrid mobile apps

According to a report by Emil Protalinski, 51.7% of Facebook users now log into their accounts and check feeds only through mobile devices. Considering that as of 2015, there were 1.59 billion active Facebook users each month, this fact demonstrates how much potential there is in the mobile application industry. For this simple reason, there are many individuals and companies eager to join the movement and gain a fair share out of this industry. However, many are barred because of difficulties in mobile app development due to it being a rather new technology. To make matters worse, the mobile application development environment is constantly changing and “every six months, there’s a new mobile operating system, with unique features only accessible with native APIs” (Mario Korf and Eugene Oksman). Then comes the question, is it possible to make use of the skills we currently have for an easy transition into mobile app development? The answer is yes, and it is called hybrid mobile apps. To get a better understanding of hybrid mobile apps, it’s logical to compare it with the other existing forms of developing mobile apps and talk about its advantages and disadvantages.

The two other forms of application that exist in the market are the native apps and the HTML5 apps. Native apps are the ones associated with specific platforms (iOS and Android) and are developed with specific tools and languages (Xcode and Swift for iOS, Eclipse and Java for Android) (Mario Korf and Eugene Oksman). These apps have great performance, high platform consistency, and can make the most use out of the mobile phone’s exclusive features such as multi-touch and built-in components. However, the downside of native apps is that they are generally very difficult to develop and have many requirements. HTML5 apps, on the other hand, is the complete opposite. It is essentially a web page that can be opened through any browser on a smart phone, and is mostly developed with HTML5, JavaScript and CSS. This means that HTML5 apps provide great cross-platform compatibility. Also, since it is distributed through the web, the development and testing cycle is much shorter than native apps because the developer can just release the new feature immediately rather than uploading it to App Stores and waiting for the reviews. However, HTML5 apps have some critical flaws: they fall short in performance (this is the reason why most mobile games are developed natively rather than as an HTML5 app) as well as in areas such as multi-touch support, offline storage, and securities.

Hybrid mobile apps combine the goods and evils of both native apps and HTML5 apps. To achieve this, it embeds an HTML5 app inside a native container, which makes it possible for the developer to write code in HTML5 and JavaScript while still getting access to specific platform features. In fact, many popular mobile apps nowadays such as Yelp, Netflix, and Instagram are developed as hybrid mobile apps without people noticing (John Bristowe). The most direct interaction a user has with the app is the user interface, and a native looking interface can be easily achieved on a hybrid mobile app with certain frameworks. While Hybrid Apps still need to be distributed through App Stores, compared to native apps it’s much easier for the developers to make changes to the application, push it into production, and also do A-B testing. Although the performance of hybrid mobile apps is still slow due to its HTML5 nature, developers can come up with workarounds to make use of native components. For example, to stream a video on an HTML5 app would look intrusive on the user side, but a hybrid app could delegate this feature to a native layer and achieve optimal performance and user experience. Although hybrid apps can be made with web development languages, we need frameworks to support such features. Popular frameworks such as Apache Cordova rely on plugins to support access to various device capabilities including accelerometer, contacts, and camera. Other frameworks such as NativeScript even advertise that the developer can get access to all mobile phone APIs without relying on plugins. However, these frameworks (unlike the ones with limited access of APIs) could potentially come with a higher learning curve. With these tools in hand, the developer is able to use web development skills to develop a cross-platform, cross-device app that has extensive device access as well as compatibility with multi-touch gestures.

However, hybrid apps also has its downsides. Firstly, since the framework for developing hybrid apps is provided by a third party, it doesn’t always immediately keep up to date with the newest technology and features. This might not be an issue for individual developers or small-scale companies, but for big companies that want to stay ahead of the trend, this could be a critical issue. In addition, security and copy-rights could also cause immense trouble for developers. For example, most of the plugins of Cordova are open-source and developed by the community. Using these plugins implies that the developers are potentially sharing user information with the creators of the plugins and the developers may get into legal issues for using these plugins if they are not careful enough. Also, according to Matthew Mead, a technologist and app developer at Redpoint, hybrid apps increase the complexity of the architecture and increase the potential points of failure. What’s more, unlike a native app that maps its features to its own platforms capacity, hybrid apps might cause issues that are unexpected and very hard to debug. Also, Matthew Mead found that “hybrid projects require specialized skills for short durations” and “more technologies are involved, so it is harder to staff”.

To conclude, hybrid apps is definitely a wise choice for web developers who want to make mobile apps without investing too much into learning native mobile app development. It requires similar skill sets as those needed to develop HTML5 apps and can achieve almost as much capability as native apps. However, the downsides are poor performance and unexpected bugs during development.

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