



Mastering the Art of Choosing the Right Technology for a Mobile Application

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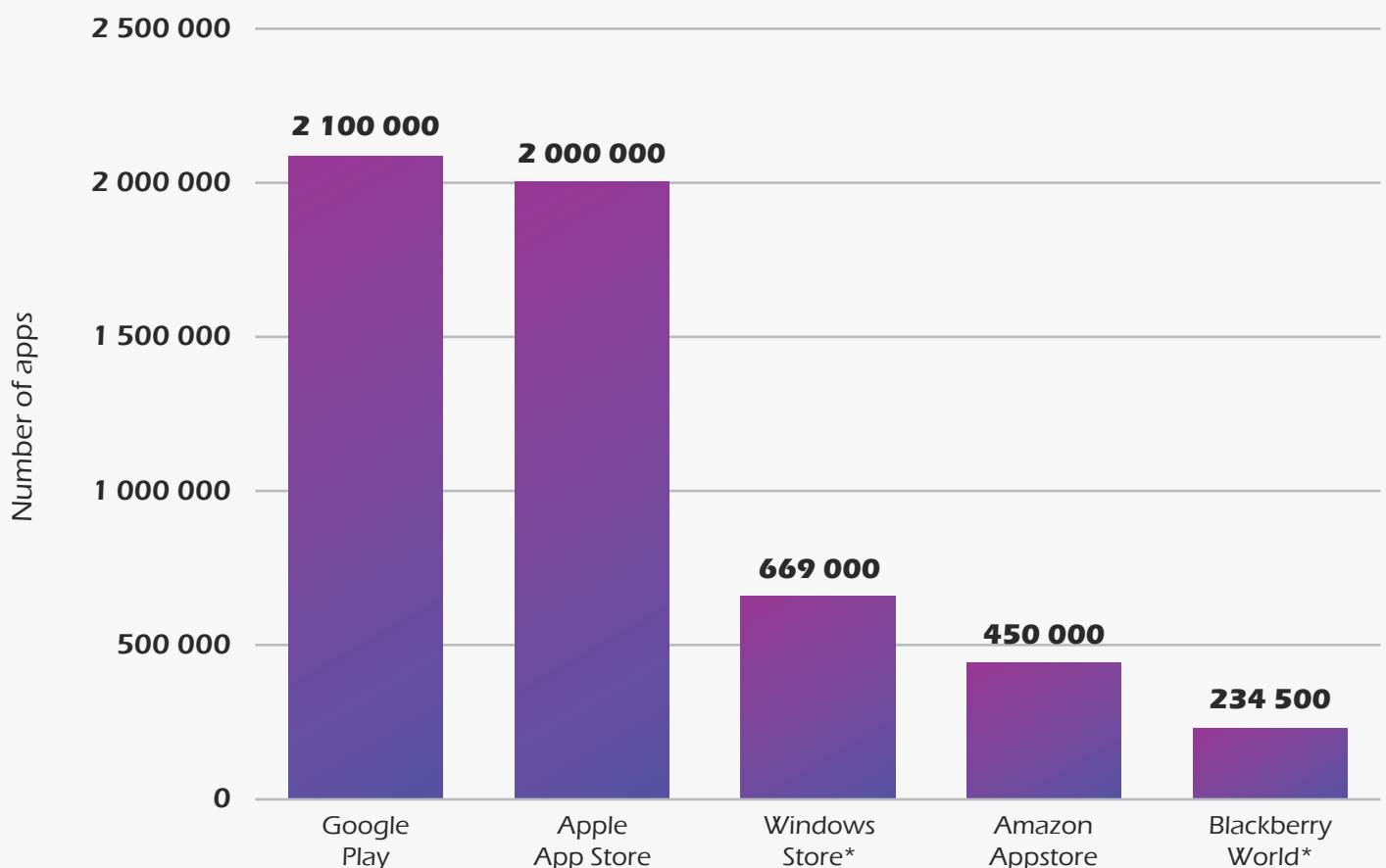
Mastering the Art of Choosing the Right Technology for a Mobile Application

Synopsis

In this era of digital technology, the basic criteria for any business to grow lies in the marketing strategy of grabbing the attention of targeted customers. Any new business starts with the Internet nowadays because on an average, an individual spends 70% of their active time on mobile applications every day. With the millennials having the shortest attention span, it is very hard to convince a user to buy a product and convert them into a customer. Mobile is one such platform where conversion and retention rates are high for any business that has good user interaction and appealing features. We have to “Go mobile” to grow.

Market trends

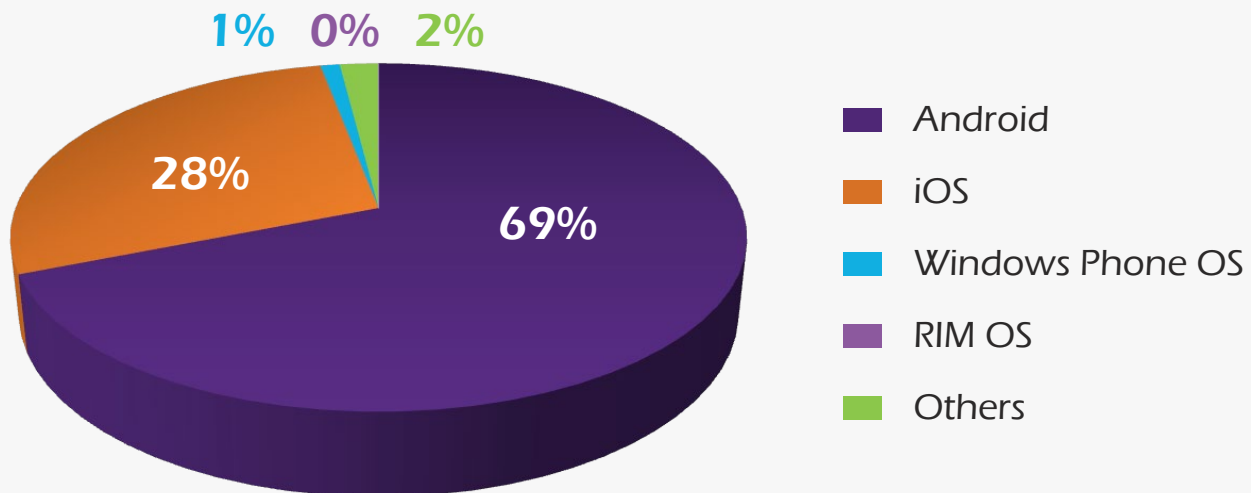
Knowing the market trends is an important factor to decide the target audience and to choose a technology for the application. At the end of 2018, considering the various trends in the market and the number of applications available in leading app stores, Android and iOS stand to be the clear winner in a bigger market. The user also holds an interest among the developer community.



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The Major mobile operating system that remains in use is iOS, Android, Windows, RIM OS among which Android and iOS hold 97% of the market share. Below is a stat representing the market shares in early 2019, through which we can conclude that Android and iOS devices will be the focus for the prime market. Powered by Google and Apple the mobile OS stands prominent in market leveraging user experience day by day and also have created much trust in the market capturing both millennial.

Mobile OS and Market Shares



Types of Mobile application development

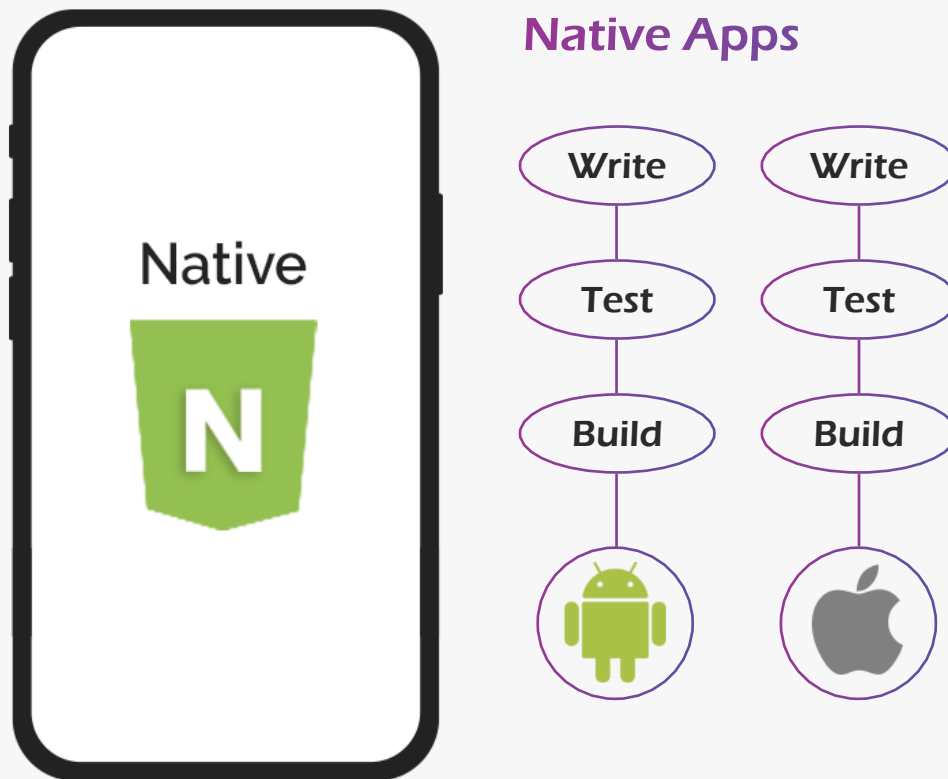
Once it is all set and you now know the market trends and where to pitch in, it is important for you to choose the right platform for building the application. Mobile application development has four major categories.

- Native applications
- Cross-Platform applications
- Hybrid applications
- Mobile Web Applications

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Native Applications

The native application is developed on the device platform. It is more relative to the device's operating system. The native application lives on the device and takes full advantage of accessing the device hardware. Location-based services and sensor-based navigations make the platform imperative for the application to make use of the hardware layer with ease. Native mobile application development gives all these in the application framework and it is also instrumental in contributing to the tailored digital experience.



Android by Google uses Java/Kotlin; whereas iOS by Apple uses Objective C/Swift. A developer with sound knowledge in using the tools to develop an application in a specific platform understands that it requires great planning to develop such apps. Apple and Google provide the developers with all the resources needed for development like IDE, development support libraries, interface elements and SDK. After development, the application becomes published handy to the users through the application store that is an app store for iOS by Apple and play store for Android by Google.

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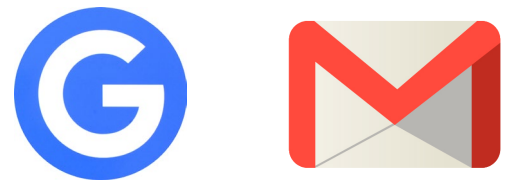
When and why native?

Whenever a native mobile application is in development, there is one question that comes upfront before arriving at a decision. What benefit does the native application bring in when there are mobile browser applications already in place?

If the application uses complex gesture controls and most of the device-specific/hardware features in the application, then native apps are the best option. When your business satisfies all the below criteria, we can proceed with native mobile application development.

- It is okay to invest upfront in time and cost
- Performance is the key value for the application
- The applications should run long to include complex features with fewer platform bugs
- Targets only specific platforms
- An application needs to use device-specific features
- The application should always sync with new updates of the OS
- Ability to have a smooth user experience

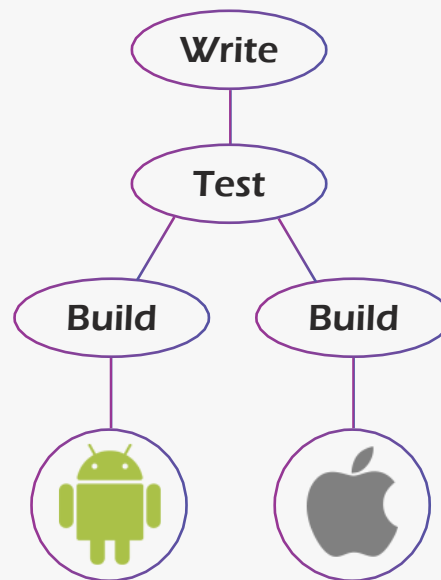
The image on the right shows native application examples



Cross-Platform applications

Cross- Platform is a more like framework that allows us to create an application that is compatible with more than one platform. The applications for specific platforms develop from a common code base.

Hybrid / Cross-Platform Apps



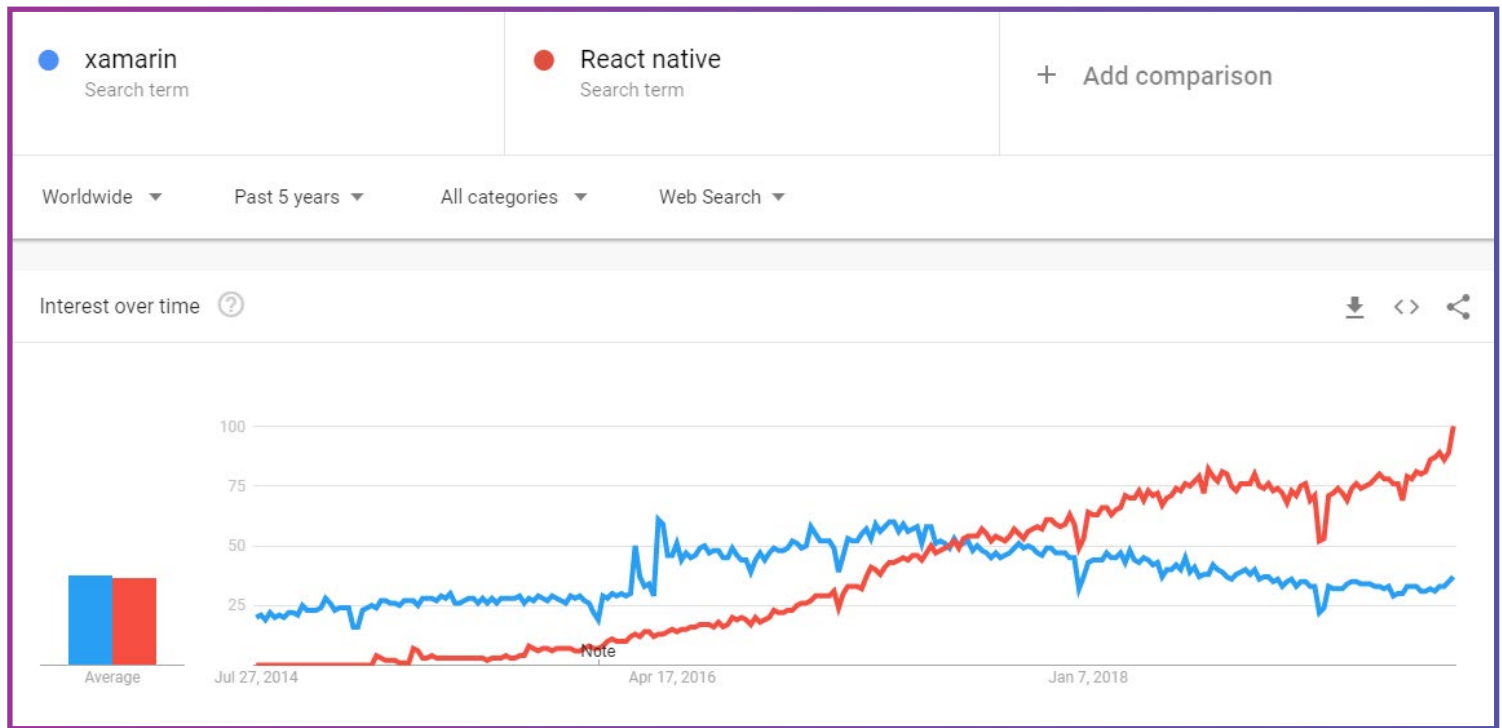
Applications provided by the cross-platform frameworks behave the same as a native application. But the native controls and other fundamental features that are available limits to the framework. The development and deployment process is also the same but with minimal effort as applications are developed on a single technology/language using the same tool. UI created is specific to each platform with native-like controls offered by the framework. After the development cycle, deployment happens through stores like native development. APK for Android is responsible to publish in play stores, IPA for iOS which gets posted in app stores. This platform specific package comes with a combination of the smart compilers

and runtimes. The code converts into an IL (Intermediate language) which in turn gets converted to native code using platform-specific run time. For example in Xamarin, it uses Mono run time, AOT for Android package generation and in iOS it is Mono Touch run time and iOS run time.

Two top cross-platform frameworks that come handy are Xamarin and React Native. Xamarin is by Microsoft and it is c#. React native is by social media giant, Facebook. It is a cake walk for java script developers.

Google trends show a comparison graph of Xamarin and React native trend for the past 5 years based on search appearances.

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Over the period React native has gained immense interest by people across the globe the main reason being the advanced technology and ease of use. Any web developer with knowledge in JavaScript can grab easy hands-on experience with React Native.

When and why cross-platform?

If the below criteria matches your business requirements then it is advisable to use a cross-platform development for your applications.

- Multiple platform compatibility
- Less development time and cost
- Live code push and updates, by extensive use of java script
- Native-like look, user experience and performance

Below are few trending applications in the store that seems to use a native application but actually, use a react native. Evernote is an organizer and planner application whereas, Twitter is an application that posts everything that happens around the world and allows people to communicate through the same medium and exchange thoughts.



Evernote

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Hybrid applications

Hybrid application is a cross-platform application that can function with different user interfaces. Unlike cross-platform applications, the User Interface is an embedded web browser that enhances HTML, CSS and Javascript.

The development cost and deployment is less since the code base is the same for all platforms. Hybrid applications are plugin based like cross-platform. Plugins bring in the native touch or use of device hardware for any specific purpose with the application. A hybrid application that is more like a web application has all the core logic contained in the web structure.

Application updates in native and cross-platform happens by Play store and App stores. This increases the deployment time and cost. A hybrid application like Ionic eradicates this gap to an extent using “Hot code push”. Hot code push updates the core of an app that is not dependent on any native plugins.

There are plenty of hybrid application frameworks available in the market. Cordova and Ionic are two interesting technologies. In a nutshell, Cordova is a Javascript application that runs on a native web view with extensions to use native features. The Ionic framework uses AngularJS framework.



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When and why hybrid?

Most applications do not require a real native experience or device-specific feature. If choosing hybrid application is your choice, then look-out for an application that satisfies the below criteria.

- More concern about development cost and deployment.
- Limited features, less dependent on device/hardware components.
- Targets multiple mobile platforms and devices.

Few successful hybrid applications in the store are as follows:

Market Watch delivers the latest business news, financial information and market data to your fingertips. Pacifica is a health monitoring and advisory application. McDonald's turkey, a restaurant app has improved their revenue with the use of hybrid application.



MarketWatch

pacifica



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Mobile web applications

Progressive web applications are an unalloyed web application that looks like a native application because of the listed characteristics.

- Web application with the advantage of a native application pins to the home page without any installation
- Updates are instant and is not through stores
- It uses any platform on any device after development
- Works like a charm even in poor connectivity and offline

PWA allows a user to feel and experience local notifications, speech recognition, touch gestures, camera, and microphone. PWA combines the advantages of native and web applications. Though PWA has a lot of advantages they come with few limitations.

- ◀ They cannot communicate with other applications on the device
- ◀ They have limited functionality compared to native application
- ◀ They lack legitimacy

When and why PWA?

Let's have a look at PWA's advantage over legacy web applications.

- Fast development cycle, less effort, time and cost
- PWA's are responsive
- Updates are instant that does not require the app store or play store.
- Supports offline and also has a decent access to device-specific feature like notifications.
- No installation is required.
- Lightweight compared to all other applications.

Few applications that have PWA support are Pinterest, Tinder and Trivago.

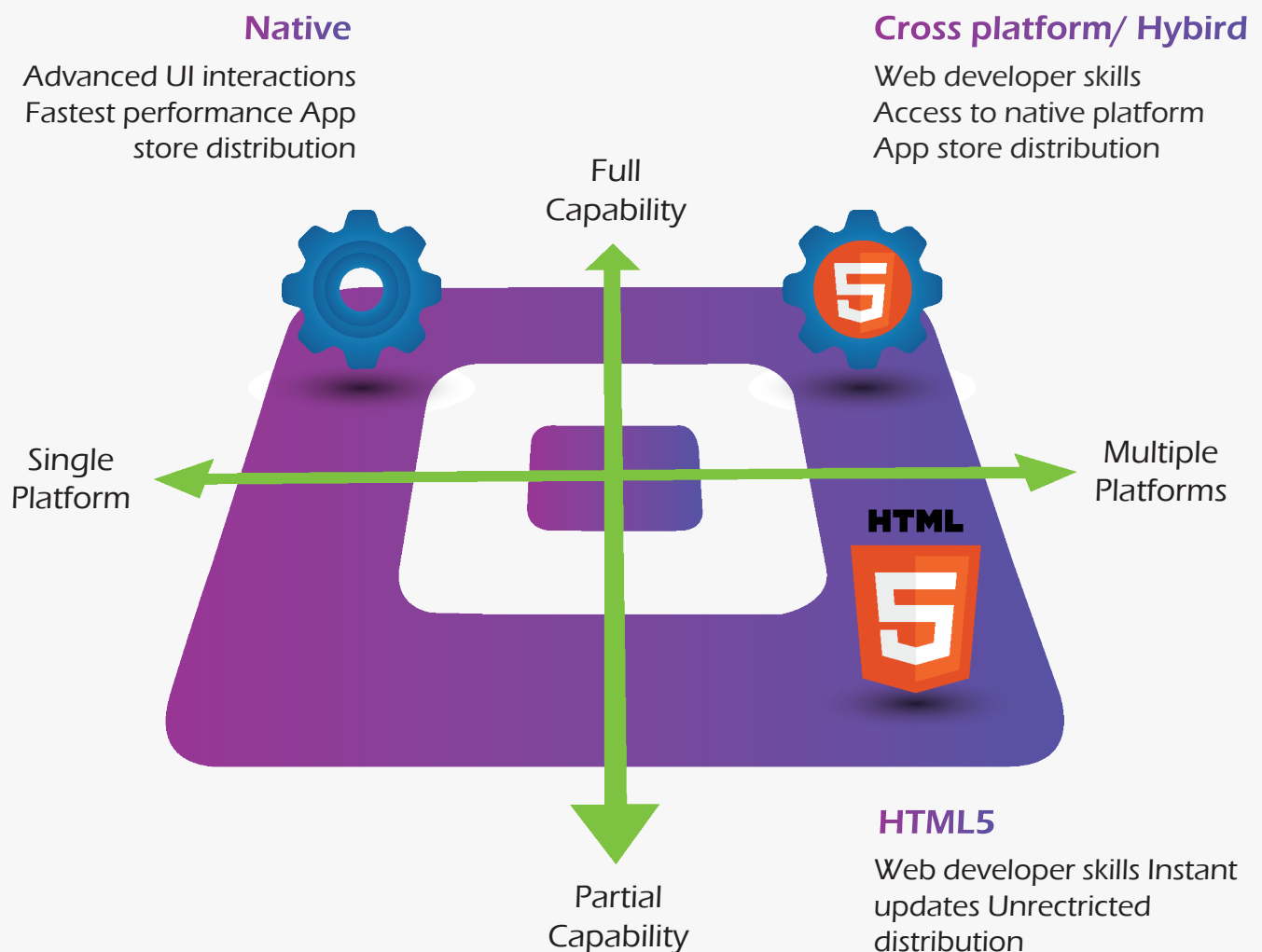


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Comparison in a nut-shell

There are two major parameters to be considered during mobile application development.

- Development and deployment time– Time taken to develop the application and deploy it to the end users system.
- Capability – Capability of the application to use device hardware and all other OS-level features.



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Native applications are platform oriented as they have an advanced UI interaction.

A Cross-platform/Hybrid application develops from a single code with few native plugins and more web involvement. A plugin is an additional package of injected code that allows any hybrid application to communicate with a native platform. This implies hybrid apps are native dependent. Applications that are built for specific platforms are still deployed through stores.

PWA targets a wide range of platforms/devices with only a partial access to native controls. The distribution happens through web URL's and updates are instant.



Conclusion

It is time to finally choose a mobile application platform and a technology that suits your business. One should not finalize looking at the benefits of native, cross-platform, hybrid or PWA. The choice depends on the business requirement. It is advisable not to miss any of the above criteria so that the application is built with a cutting-edge technology.

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