MOBILE NATIVE APPS ARE NO LONGER NEEDED WITH THE ARRIVAL OF PROGRESSIVE WEB APPS AND WEB APIS

INSTALLING AN APP WITHOUT AN APP STORE: THE FUTURE OR A MYTH?

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HIGHLIGHTS

Now a company needs multiple development teams to get their full arsenal of products and services within their omnichannel strategy.

More and more companies are adopting the techniques of Progressive Web Apps (PWA) and Web APIs. With these relatively new techniques, you can make your web application feel just like a mobile native application.

MORE FOR LESS

Mobile native applications are the applications we use on our mobile phones. You're browsing to an app store, you search for the application you need, and then you install it. In addition to a mobile native app, companies often also have a website or a web application to offer their products and services. Mobile native applications and web applications work with different technologies. This means that a company needs multiple development teams to get their full arsenal of products or services within their omnichannel strategy.

In addition, app stores determine which mobile native applications are offered in app stores at all, app stores are paid to develop the app and they create a dependency during the testing of the mobile native application. Wouldn't it be great to build an application without dependencies on external parties? Now you can, with Progressive Web Apps (PWAs).

WHAT IS A PWA?

Progressive Web Apps are an evolution of web applications that use a 'Web application manifest', 'Service workers' and other 'Web platform features' in the form of Web APIs. A lot of technical terms, but what it means is that a few small adjustments to a web application can result in an experience equivalent to that of mobile native applications. All this without being dependent on app stores or without the need for different development teams for different types of applications.

ADVANTAGES OF PWA

The benefits of a PWA can be divided into 'Technical benefits' and 'Business benefits'.

TECHNICAL ADVANTAGES

PWAs have 8 essential technical advantages[1]:

1
Discoverable
The PWA and its content can be found faster by search engines via meta data from, amongst other things, the web application manifest.

2
Installable
The application can be installed directly from a browser on a device in order to be available via the home screen or an application launcher. The application is then automatically updated, and updates do not need to be installed manually.

3
Linkable
The PWA can be shared by a URL to the relevant application. There are no complex installation processes from app stores required.

4
Network independent
The application also works offline or with a bad network connection thanks to application of caching strategies in service workers.

5
Progressively enhanced
All functionalities of the PWA are available on modern browsers. On older browsers a set of basic functionalities is available.

6
Re-engageable
The application can send notifications about new content or functionalities, even if the user does not actively use the application.

7
Responsively designed
The PWA is compatible with any device with a screen and a browser. Examples include mobile phones, laptops, tablets, TVs, and refrigerators.

8
Secure
The connection between the user, the application and the server are secure against malicious third parties, provided that the HTTPS protocol is used.

1 https://developer.mozilla.org/en-US/docs/Web/Progressive_web_apps/Introductionapplicatie automatisch

BUSINESS BENEFITS

Every technical advantage can be translated into a business advantage. In addition, there are countless other business benefits to be named[2], including:

- **One development team, one application.**

A PWA is simply an evolution of a web application. This means it can be developed by every web developer. Because a PWA can potentially replace mobile native applications, there is no need for separate development teams to develop the web application, iOS application and Android application. A single web development team is enough. This means a faster time-to-market and a lower cost of development and management.

- **Better developer experience**

Web applications offer more freedom than mobile native applications because they do not necessarily have to land in an app store. App stores impose restrictions on developers and determine whether an application is offered in their store. Fewer restrictions mean more freedom for developers and therefore a better developer experience, which in turn can lead to better developer retention.

- **Larger talent pool**

JavaScript is the language that prevails in the world of web development. PWAs are essentially web applications and are thus, mostly written in JavaScript. JavaScript is the most used programming language in the world[3]. This means that the talent pool for JavaScript developers is larger than that of for example, iOS or Android developers. As a result, it is easier to find and hire developers who are already familiar with the technologies being used within an organization.

THE DIVIDER OF PROGRESSIVE WEB APPS

With all those technical and business advantages, the question remains: why app stores haven't disappeared yet and why are they not replaced by PWAs? The answer, in short: browser compatibility and the two camps in which the modern browsers, Google Chrome, Microsoft Edge, Mozilla Firefox, and Safari, are divided.

PWA BROWSER COMPATIBILITY

If we look at the main functionalities of a PWA, Service workers, Web application manifest and Web platform features (Web APIs), then we see the following[4]: Service workers are used by all modern supported browsers[5]. The Web application manifest is largely supported, with some caveats on Firefox and Safari[6]. With the Web APIs we see a bigger difference. Chrome and Edge support significantly more APIs than Firefox and Safari.

THE TWO BROWSER CAMPS

There are rumors that the level of support is linked to conscious choices of the various browser parties. For example, Apple has announced that it will not support certain Web APIs, like the Bluetooth API soon and might not ever support these[7]. Mozilla seems to be partly joining Apple's camp by abandoning experiments with additional PWA functionalities[8]. On the other hand, Chrome and Edge show wider support for a web with as many possible functionalities. This dichotomy raises the question whether PWA is mature enough as a technology to use in an organizational context, replacing a mobile native app. A question that may be answered by answering another question: Do I need all the native functionalities and Web APIs to get the best possible user experience for my service?

Web applications offer more freedom than mobile native applications because they don't necessarily need to land in a app- store

2 https://www.divante.com/pwabook/chapter/04-benefits-of-pwa
3 https://insights.stackoverflow.com/survey/2021
4 https://firt.dev/notes/pwa-ios/
5 https://developer.mozilla.org/en-US/docs/Web/API/ServiceWorker
6 https://developer.mozilla.org/en-US/docs/Web/Manifest
7 https://webkit.org/tracking-prevention/
8 https://firt.dev/pwa-2021/

ON THE SHOULDERS OF GIANTS

Whether you can convert your entire digital business operation to a PWA is highly dependent on which native functionalities you need. Most companies probably don't have a need for the, not (yet) supported Web APIs, such as the Bluetooth API. In addition, there are many functionalities that are already usable on any device. Tech giants like Google and Microsoft are also ahead of you when it comes to exploiting the potential of PWAs.

A good example of this is the gaming industry. Google Stadia and Microsoft Xbox are already eagerly taking advantage of this evolution in web development. The PWA techniques now available make it possible to play triple A games like Destiny, Fortnite and Halo in the browser on your phone, tablet, or laptop. And you may think that only these high-tech companies have more skills to build this kind of functionality, but with some simple progressive enhancements from the Web APIs and PWA it is possible to improve the user flow of your own applications. For example, you can improve payment traffic with the Payments API or the login method by adding face ID or fingerprint authentication.

With relatively small adjustments to your web application, you can quickly provide a better user experience. Companies like Trivago, Twitter and Pinterest were the early adopters, and they saw their customer interaction grow dramatically. This had everything to do with the faster responses and easier ways to get back to their app or website, using the same web app under the hood, a PWA. Per use case, it should be clear whether a PWA will be able to replace your app. For now, we choose to implement PWAs in parallel so that you can already get the advantages from the progressive web technologies.

LEAP OF FAITH

As an organization, there are many benefits to be gained from the techniques that PWA entails. Through the battle in the two browser camps chances are that not all device functionalities will become available for the web. But it is expected that your users will not miss those functionalities. There are already countless success stories to be found from various tech giants, proving that now is the time to adopt the techniques of PWA. Various customers of Capgemini in different industries such as retail, industry and automotive have taken the first step to PWA.

In the future, the web will be getting closer to a native app. Every year new functionalities will further close that gap. Now it may not be feasible to exchange the native app and the web applications for a PWA, because of the power of Apple's app store and Google's Play store. But there are already so many benefits to be gained that postponing adoption of PWA is no longer an option. Do you want your company to be always dependent on app stores? Or will you devise your own course and make your solutions available for everyone without the need for your users to go to an app store first?

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