

# Implement and Evaluate the progressive web application

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## Paper Details

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## Abstract

This paper will mainly discuss about the theory and definition of progressive web application and way to implement and evaluate progressive web application using React and other user interface and discuss the possibility that progressive web application could be the future of mobile development.

## Introduction

Progressive Web App is web applications capable of using as native apps. In other word, the users will no longer need to download mobile apps from the app store for iOS user or google play for android users. Users could load and run in the web browser instantly because PWA use combination of site and native app techniques to render data to users as they use native app.[Ban].PWA also offers efficient and fast user experience since user could use the app via browser in their devices.”PWA developments utilizes a vast community of Web-based tools and practices that Android or iOS devices developers can only hope of. They are simple to create and only support one version of the software. It works for all users regardless of browser preference. The application will run across a different browser and will gently decline when specific features are unavailable while providing a good customer experience.” [Mal+15].(number of word count:66)

## Discuss the theory and definition of progressive web application

Due to the non-interoperability software systems of native apps, many companies are seeking for new solution to deal with this issue.[Mer]. Progressive web apps, which also know as Cross-platform programming, has become a the best choice for those companies which need professional mobile developers for their system. The functionality of PWA depends on the "service worker" because it offers the theoretical base for a PWA. A service worker is a computer program which web browser runs in the background to allow web apps to function normally while it is in offline state. "It acts as an intermediate between the computer and the internet, intercepting and handling network requests"[Mer]. The functionalities of PWA are exactly the same with native apps. The artifact of web app is a JSON-format file which specifies the core PWA's menu system. It also regulates how PWA is allowed to be installed and displayed to end-user in the same manner as native apps could in mobile application. The title, explanation, design, and listing of needed materials are all included in web app manifests. PWAS can use ordinary Web services and be put on a phone's main screen, like regular web services with only bookmarks [Ban]." When the developers use web pack, it scans developers' program and automatically generates a graph structure that contains all of the components developers will require, then packs them all into one or more packages and boosts the user's performance." [Cse]. (number of word count:39)

## Implement and evaluate progressive web applications using React and another user interface

Developers could implement PWA by using react, which refer to open source JavaScript library which allows developer to implement interactive user interface components, or other user interface such as Document Object Model, which is a cross platform interface which renders HTML and XML files. In addition, "the quicker processing performance of React minimizes the time it takes for a page to load. React is not as difficult to understand as Ember JS technologies. If the developers are contemplating on how to create a React dynamic web service, it will be difficult to operate." [BBM96] (number of word count:30)."React supports JSX, a JavaScript syntax extension that allows developers to use HTML-like syntax in your code." [dev] (number of word count:17). Furthermore, developers don't need to use react extension to structure how components should be rendered in the app. In other word, it is a very convenient approach for developers. On top of that, developer could also create React-based PWA by using HTML, CSS and JavaScript Programming Language. Hence, the developers could be able to use pre-made templates or frameworks easily. "React Developer Tools, Facebook's Create React App. Semantic UI React, and Ant Design are some of the more well-known examples." [Cse] (number of word count:20). Moreover, Re-

act is considered as the seventh most commonly highlighted accessible project on GitHub website. There are two major companies, which are Tinder and Starbucks, has been implementing React-based PWA[Ban]. These companies believe the fast and accessible of React-based PWA.

## Discuss the possibility that progressive web applications could be the future of mobile development

The benefits of Progressive Web Application could be factors which many developers believe that it is the future of cross platform programming tool. In addition, PWA is absolutely vital for developers to be able to produce fast and reliable code for both iOS and android operating systems. Furthermore, mastering PWA is very straightforward for developers. PWA also provides a fast and smooth users' experience by storing data based on the devices' capabilities [dev]. For instance, one of china famous companies named AliExpress uses PWA. As a consequence, the company increases the industry's exchange rate by 104 percent. On top of that, it also has positive influence on the time which consumers spend per session. It increases around 74 percents. Another example is that the developer team who used PWA at eXtra Gadgets, had generated 100 percents more sales and attract new users using web push notifications.

## Conclusions

In conclusion, progressive web app has lots of benefit for software developer since it allows developers to use cross platform capabilities and develop apps in a very efficient way. Despite its advantages, PWA still need to be mature and larger developers communities because it is still in its growing state.

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