Web Application (PWA) Design and Development for Eastern Cuisine Chinese Restaurant

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ABSTRACT

With the rapid development of the Internet, the Internet usage globally has run into a totally different situation: the mobile internet access and connection overcomes the access from the desktop. Users' habit of using the internet has been changed a lot. However, the process of installing one native mobile app is not super easy, it could be tough sometimes. The Progressive Web Application (PWA) was developed to combine the advantages of the native mobile app and the responsive web. The purpose of this paper is to demonstrate the process of developing a PWA with the function and services the restaurant industry offers, with concerned web technologies.

Keywords: Progressive Web Application, Design, Development, Webs sockets, JSON

1. INTRODUCTION

This project focused on building a progressive web application (PWA) for Eastern Cuisine Chinese Restaurant and Takeaway in Richmond, Nelson, New Zealand. The website was developed to be primarily used on mobile devices. The PWA will display every aspect of the restaurant, which includes: the decoration of dining area and the takeaway area, the specialty, the catalogue and list of dishes for pickup and dine in, catering, booking, and contact information. The function of the PWA is for clients to order pickup food, and the pickup order will be send to the manager's smartphone.

Current surveys show that people spent more time on mobile phone, the boss of the restaurant thought it is necessary to develop an online platform for the business (website or mobile application), for example, StatCounter Global Stats finds mobile and tablet internet usage exceeded desktop for first time worldwide in October 2016 (mobile and tablet devices accounted for 51.3%; Desktop accounted for 48.7%. (StatCounter, 2016). Mobile web browsing has been growing steadily. Thus, companies should pay more attention to the visiting from the mobile devices.

The principal technology used in this project is PWA, that is the combination of some technologies such as web app manifest, service workers, cache API, and push notification. For the website developed for mobile, these technologies are used: Hypertext Markup Language (HTML), Cascading Style Sheet (CSS), Bootstrap, JavaScript, jQuery, JavaScript Object Notation (JSON), Web Sockets, and Node JS, see Angel-Luis (2018), Chraiet. (2018), Dogtiev (2018) and Goriunov (2018).

2. WHAT ARE PWAS?

Progressive Web Apps (PWAs) are web applications that are regular web pages or websites but can appear to the user like traditional applications or native mobile applications. The application type attempts to combine features offered by most modern browsers with the benefits of a mobile experience (Wikipedia, 2018). The PWA is an "app" based on the web, which feels and behaves just like a native mobile app.

The main features of a PWA are that it:
• works both online and offline

• looks or feels like an app, it is a website, however, it integrates the differences between the normal website and the mobile applications

• can dramatically increase the loading speed, shorten the loading time, and therefore improve the performance, increase the conversion rate

• is installed very fast (only 3 seconds with simply one click); • pushes notifications to the end users, which is great for owner to boost their business

• doesn't need to be published in the app stores, so developers don't need to wait for quite a long time for the approval to be published in the app stores; the users don't need to spend long time to download the app and install it

• is cross platform, as it is running based on web, so as long as the browsers support it, it will work, and at present, most of the browsers support it; the developer doesn't need to develop different apps for different operating systems.

3. DEVELOPMENT TEST DRIVEN

A user-centric interface development focused approach leads requirements analysis for both the requirements from the restaurant and the technologies used during the process of the development.

Based on the requirements, project plan was made with the user interface and the layout. The project was implemented following the plan and the structure of the app, with key functions directing a test-driven process that focused on working from the interface to implementation of app functionalities.

The output of the project at each step was evaluated with a professional tool (Lighthouse, 2018). to generate reports to show what should be done to improve the app.

4. FUTURE DEVELOPMENT

As shown from Lighthouse reports, the content of the pages will be sized correctly for the viewport to make sure the pages could be displayed perfectly on mobile screen.

To improve the user experience and rise the engagement when user is using the app, the animation to load the dish list both on menu page and the cart page will be developed to correspond with the animation on Navigation page.

As the special request are always the same for the same user, and many users actually have the same special request, so tags of frequently asked special request, such as Mild, Medium Hot, Spicy, etc., will be developed to save users from typing.

In the menu page, as the users may only unfold two or three categories to finish their order, not every category, especially the regular clients of the restaurant who knows exactly what they would like to order, it will be better to load the dishes of the categories the clients click to unfold separately, not the categories that the clients don't unfold. In this case, the page will be loaded faster, and less mobile data will be consumed.

Another PWA will be developed for the New Order page to install on manager's smart phone, so that the manager could check the new order more conveniently.

5. CONCLUSION

Progressive Web App (PWA) development was undertaken based on the client's business: Eastern Cuisine Restaurant. A user centric development approach was successful in this case.

As one of the most important trends in web development industry in 2018, the progressive web application has a long way to go and is evolving fast. The future of PWA could be expected with excitement, it will play a vital role in the web development technology family.

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